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"Video is the new corporate medium for any communication, from a training session to an annual report."

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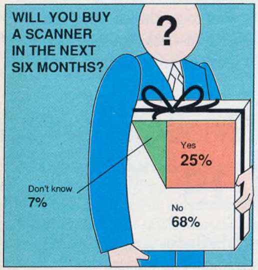

Source: July 1987 Creative Strategies/MacWEEK

PixelPaint leads SuperMac parade

Software to bring color to business presentations

BY CLIFF LEHMAN
and HENRY BORTMAN
Special to MacWEEK

MOUNTAIN VIEW, Calif. — The ink is barely dry, but SuperMac Software will announce one of the first color paint programs to take full advantage of the Macintosh II's color capabilities at Mac Expo in Boston next week, according to John Duhring, the company's general manager.

PixelPaint, developed by Pixel Resources of Norcross, Ga., is a color bit-map-drawing program. The program will list at between $300 and $500 and will be available in the late fall, Duhring said.

SuperMac Technology, of which SuperMac Software is a division, markets Spectrum, a color graphics board, and a 19-inch color monitor for the Macintosh II. PixelPaint, SuperMac's first graphics application, will complement the color board and monitor, Duhring said.

"SuperMac could alienate other developers

See SUPERMAC, Page 28

Bit-mapped color presentation graphics programs such as SuperMac Software's PixelPaint work very well on SuperMac Technology's 19-inch Trinitron Color Monitor. The image was created by Jon Gibson.

COURTESY SUPERMAC TECHNOLOGY

One piece at a time: Mac II puzzle takes shape

BY RICHARD HALSTEAD
Special to MacWEEK

CUPERTINO, Calif — Delays in the availability of Mac II components has turned the introduction of Apple's showcase business product into a less-than-businesslike proposition.

So far, the company has been agonizingly slow in delivering three integral elements: a color monitor, a hard-disk drive and additional memory storage devices. The absence of these critical pieces has overshadowed the less urgent concern over the tardy arrival of the promised expanded keyboard for the Mac II.

Causes for the delays range from problems with quality control to disagreements with suppliers about specifications. But perhaps the best overriding explanation is that either out of necessity or by choice Apple relied on single sources of supply for many key ingredients.

See COMPONENTS, Page 28

MICHAEL GUTSTADT

MacroMind's Marc Canter demonstrates VideoWorks II, a color animation program.

Performance video boards due for Mac II

By ABIGAIL CHRISTOPHER
MacWEEK Staff

ANAHEIM, Calif. — A new generation of sophisticated graphics hardware is coming to the Macintosh as video developers rush to complete high-performance graphics, Genlock and frame-buffer boards for the Mac II.

When the technology begins to arrive in force later this year, the Mac II will become a serious competitor to much more expensive computers for applications such as animation and video production.

The excitement over that potential resulted in unprecedented crowds packing the Apple booth at the annual SIGGRAPH conference held here last week. Overall, 30,000 graphics professionals from all over the world attended the computer graphics show, breaking previous years' records by about 5,000, according to conference officials.

Typical of those checking out Apple's video potential was Kirk Thatcher, associate producer of the movie "Star Trek IV."

"The combination of its open architecture and low price makes the Mac II attractive to me for animation," he said. "But we need more graphics software and video support like Genlock."

Genlock (sync generator-locking) boards improve the quality of video images that can be transferred between computers such as the Mac II and video sources such as BetaCams and digitizing cameras. By keeping video signals synchronized to adhere to the RS-170 standard regardless of the source, such boards prevent fluctuations in horizontal and vertical scan rates that can degrade image quality and produce on-screen image distortions.

One reason advanced video hardware has

See SIGGRAPH, Page 28

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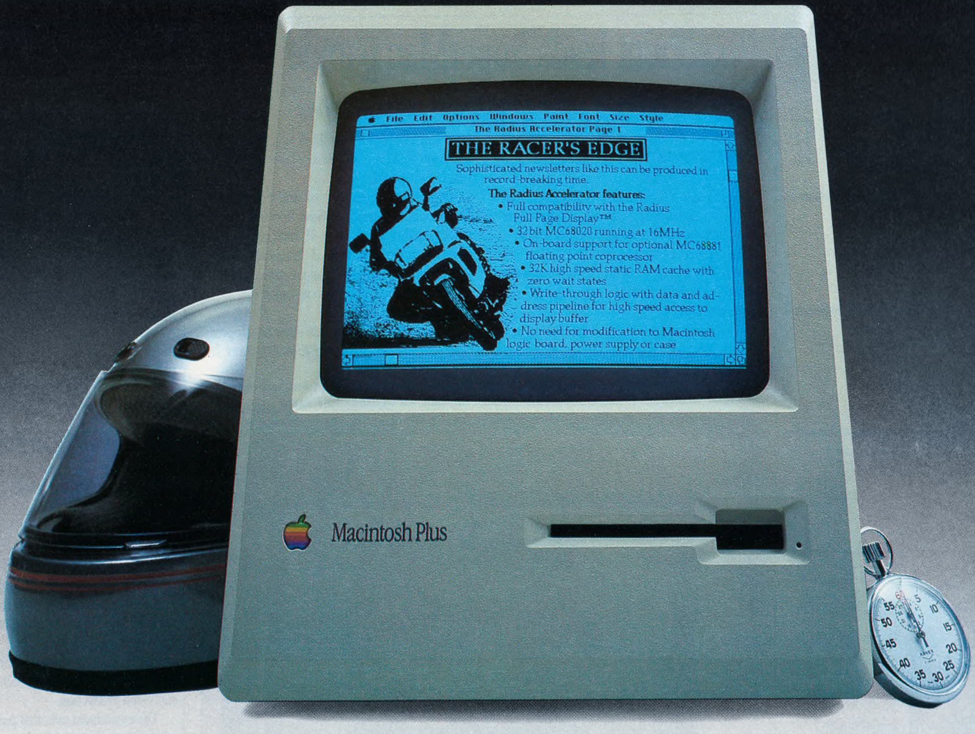
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The Radius Accelerator Page 1
Macintosh Plus

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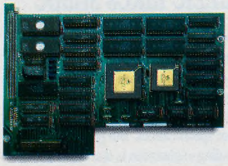

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LATE NEWS

PC interface board from Tandy anticipated

FORT WORTH, Texas — Mac connectivity hardware for the PC is expected to be part of a series of new products announced by Tandy/Radio Shack today.

The new hardware is a PC interface board that is conceptually similar to the Tandy Trackstar, according to sources close to the company. Industry analysts speculate the product may allow a PC to run Mac software. The Trackstar is essentially an Apple II on a PC interface card.

Tandy/Radio Shack is at 1800 One Tandy Center, Fort Worth, Texas 76102; (817) 390-3700.

Micrographic announces upgrade of MegaScreen software

CANOGA PARK, Calif. — Micrographic Images announced last week an upgrade of its MegaScreen software to allow simultaneous use of the original Mac screen with the company's 19-inch monitor for the SE and Plus. The company also is expected to announce a Mac II monitor at next week's Mac Expo. The 1,024-by-900-resolution monochrome screen, to be called the 2001, will be bundled with the MegaTalk E-mail system and be priced at $1,995.

Micrographic Images is located at 20954 Osborne St., Canoga Park, Calif.; (818) 407-0571.

Solutions International to unveil SuperGlue

MONTPELIER, Vt. — A new version of Glue — the software, not the sticky stuff — from Solutions International will be introduced at the Mac Expo in Boston Aug. 11-13.

The program, called SuperGlue and priced at $89.95, includes a SuperImageSaver, SuperViewer and SuperViewerDA. It is set to ship at the end of this month. The ImageSaver is the printer driver that saves text and graphics to disk as images, which can then be sent over on-line services or networks to any type of computer. SuperViewer is used to open the files and print or copy them. SuperViewerDA is a Desk Accessory version of the viewer.

Solutions International is at 29 Main St., Montpelier, Vt. 05602; (802) 229-9146.

White Pine offers Mac-DEC connectivity package

AMHERST, N.H. — Another link between the Mac and Digital Equipment Corp.'s computers has been forged, this time by White Pine Software Inc. with its Reggie software package for the Mac.

The software, priced at $99, converts MacDraw, MacPaint and Clipboard images to DEC's ReGIS and SIXEL formats so that Mac graphics can be imported into DEC host-based applications and output to DEC terminals or other output devices. It will be exhibited at Mac Expo.

White Pine Software Inc. is at 94 Route 101A, Amherst, N.H. 03031; (603) 886-9050.

Analysts praise QuickDraw laser printer

BY RICK LEPAGE
MacWEEK Staff

CAMBRIDGE, Mass. — General Computer Corp. is preparing its second major strike into an uncharted Macintosh peripheral market with its Personal LaserPrinter, a mid-range, low-cost laser printer, and analysts who have seen the printer are giving it high marks.

The Personal LaserPrinter is a 300-dpi laser printer that is based on the Macintosh's QuickDraw graphics routines and that does not use Adobe's PostScript page-description language. The printer contains little of the sophisticated hardware found in Apple's LaserWriter PostScript-based printers. Instead, it relies almost entirely upon the Mac's processing power and GCC's software to provide the translation of QuickDraw screen representations to the printed page. Fonts reside in the Macintosh (as opposed to the printer like with the LaserWriter) and are downloaded at the time of printing.

Contrary an earlier report in MacWEEK, which was based on information from sources outside the company, the Personal LaserPrinter will be priced at $2,599. The printer can be used with any Mac with a SCSI port and at least 1 Mbyte of RAM. A hard disk is recommended.

GCC, which pioneered internal hard-disk drives for the Mac with its HyperDrive series in 1984, is again going after a sector of the peripherals market that appears wide open. This time, GCC is targeting professionals who need high-quality output and can not or do not want to share a networked laser printer.

"They found a niche where there was demand for such a printer and are bringing it to market before anyone else," said Ray Shu, a research analyst for San Jose, Calif., Dataquest's Electronic Printer Industry service. "PostScript for desktop publishing is useful, but GCC's implementation of QuickDraw, with the addition of scaleable fonts, should fufill most general business needs," Shu said.

"One-third of the Macs out there are standalone, and it is obviously aimed at that user," said Bill Langenes, a research associate of Creative Strategies Research in San Jose, Calif.

The Personal LaserPrinter uses outline fonts developed by Bitstream Inc. of Cambridge, Mass., that can be scaled or rotated to any size and angle. GCC will provide versions of the same fonts that come with Apple's LaserWriter — Dutch (Bitstream's version of Times Roman), Swiss (Helvetica), Courier and Symbol, in addition to Swiss Narrow and Zapf Calligraphic (Palatino). GCC will also sell an optional package, Fonts Plus, that will provide the other fonts found in the LaserWriter Plus.

The printer has three printing modes — high quality, draft and preview. The high-quality mode output is 300 dpi, while the draft mode prints a 75-dpi image. The preview option allows users to look at the document on the Mac screen as it will be printed. Using this mode, a page can be seen at a reduced size or full size. When printing, the user has the option of printing immediately or delaying the printing to a later time. Delayed printing spools QuickDraw output to the Mac's disk where it can be output later with an application that prints all queued files.

Despite generally giving the printer good marks, observers question whether Mac users might expect more from a printer priced over $2,500. "Pricing might be a problem, though for the high-volume user, the cost would be justifiable. The question will be the user's perception of the printer. There are at least some low-cost — under $2,000 — laser printers available that now connect to the Mac," said Naomi Luft, a senior research analyst with Datek Information Services in Waltham, Mass.

Analysts said GCC's timing was a key issue, pointing to the rumors that Apple has been working on a non-PostScript printer.

"It's important to have a mid-level tier, and there is a big market ripe for such a printer. The fact that they are coming out with a QuickDraw printer before Apple should also be good," Luft said. ■

General Computer's Personal LaserPrinter is based on QuickDraw, not PostScript.

COURTESY GENERAL COMPUTER CORP.

Aldus, Altsys quiet about reports of Masterpiece sale

SEATTLE — Amid published reports that PageMaker-vendor Aldus Corp. has bought the rights to Masterpiece, Altsys Corp.'s page-illustration program, both vendors are remaining tight-lipped, although Altsys of Plano, Texas, would not deny the reports

There is speculation that Aldus cannot announce the product during its 90-day "silent" period starting from the date of its initial public stock offering, which is required by the Securities Exchange Commission. If reports are true, the deal cannot be announced until Sept. 14.

Think 'n Time has graphic approach to idea processing

AGOURA HILLS, Calif. — Mainstay, the software developer behind the pioneering "VIP" visual programming language, is putting the finishing touches on Think 'n Time, a new Desk Accessory that brings a graphic approach to outlining and idea processing.

According to Tom Nalevanko, Mainstay's president, Think 'n Time will carry a list price of $99.95. It will be shown at the Mac Expo in Boston Aug. 11-13 and should be available in September.

Under development for a year and a half, Think 'n Time organizes sheets of "electronic paper" into a tree-chart format. Text can be entered at any level of the chart, and entries can be reorganized by dragging icons. Entries also can be stamped for date and time and displayed as a time line. The program automatically generates calendars for a user-specified period. Data can be saved as text or exported to Living Videotext's More.

Mainstay is readying a barrage of other new products and upgrades for release later in the year. MacFlow 2.0, an enhanced version of the company's flow chart-based design and documentation tool, is slated for September distribution. The suggested retail price will rise to $195, but registered owners of the previous version will be able to upgrade for $20 or $25.

Expected later this fall is MacSchedule, a $195 application intended for designing schedule forms. Still another program under development, tentatively titled Table Maker, is designed to facilitate formatting tabular data.

A free demonstration disk with limited versions of Think 'n Time and three other Mainstay products will be available at the Mac Expo.

Mainstay is located at 5311-B Derry Ave., Agoura Hills, Calif. 91301; (818) 991-6540. ■

MEDLINE database comes to Mac on CD-ROM discs

BY JIRI WEISS
MacWEEK Staff

NORTH ANDOVER, Mass. — A search of the National Library of Medicine's MEDLINE database costs about $100 to $150 per hour. By delivering the database on CD-ROM discs and searching them with a Macintosh-based system, Aries Systems Corp. said it hopes to lower the cost to 75 cents per hour.

Starting in January, Aries plans to offer three years worth of abstracts and citations from MEDLINE on CD-ROM discs, retrieval software for the Macintosh, telephone support and quarterly update discs for $1,495 a year, according to Lyndon S. Holmes, Aries' president. The cost of 75 cents per hour of search was based on 2,000 hours of search time per year, he said.

Aries' MEDLINE Knowledge Finder will include citations and abstracts of articles in 225 journals, the most commonly used subset of the 6 million or so citations available on MEDLINE, Holmes said.

The system is intended primarily for use in medium-size and small medical libraries, he said, but it is likely to be used in doctors' offices as well.

Aries Systems wrote its own CD-ROM retrieval software, Holmes said. Its probability algorithm searches for a keyword on the basis of frequency. "Rather than being told that there are 1,500 articles with the keyword you are looking for, you get 100 articles presented in the order of relevance," Holmes said.

The database will be published quarterly and offered in two configurations: from 1983 to the present and from 1985 to the present.

The CD-ROM drive Aries employs, the CM 110 Compact Disc ROM from Philips Subsystems and Peripherals Inc. of New York, is available for $1,300, according to Holmes. Rentals will be available.

Aries Systems will demonstrate a prototype of the MEDLINE Knowledge Finder at a seminar at noon Aug. 11 at the Mac Expo in Boston.

The system, among the first CD-ROM applications for the Macintosh, will ship in January, according to the company. Aries plans to work on publishing other databases on CD-ROM disks depending on the success of the present venture, Holmes said.

Aries Systems Corp. is located at 79 Boxford St., North Andover, Mass. 01845; (617) 689-9334. ■

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The technically inclined will be pleased to note that it has

Neural networking research gains new life

BY BEVERLEY KANE
Special to MacWEEK

SAN DIEGO — Twenty years after being driven underground by skeptics and rivals, neural network technology — a method of computing that mimics the working of the human brain — re-emerged at the IEEE's First International Conference on Neural Networks held here recently.

Most of the original cast of top researchers, as well as some newcomers among the 1,400 at the Institute of Electrical and Electronic Engineers' conference, presented more than 200 papers demonstrating neural computing's links with computer science, neurobiology, mathematics, physics and cognitive psychology.

Also present was the Mac II, one of the most promising workstations for exploiting this potentially revolutionary technology.

Under the auspices of the IEEE and promoted by the Department of Defense, neural computing has regained its nerve. Refinements in theory and the advent of workstations like the Mac II that approach the power of the mainframes of two decades ago have brought neural networks back into the academic and commercial eye.

Neural networks are the sixth generation of a technology that began with vacuum tubes and proceeded through transistors, integrated circuits, large-scale integration and parallel processing. Neural networks model the parallel nature of the brain. By using differential equations, they mimic communication between living nerve cells. Because they are self-modifying systems, neural networks make explicit, algorithmic programming unnecessary.

Today, most neural networking implementations are software simulations on Von Neumann machines, which have a single CPU and are serial processing. However, workstations like the Mac II are the prime vehicles for popularizing the new technology. Two Mac offerings, one in hardware and one in software, debuted at the convention.

In a booth crowded with spectators, Neuronics Inc. of Cambridge, Mass., introduced MacBrain, the first commercial neural net simulation program for the Macintosh. MacBrain offers an animated, interactive shell for network modeling. Matt Jenson, MacBrain's creator and president of Neuronics, said about neural networking, "The brain learns and remembers by stimulating units that represent patterns of information, like a face or a symphony." Given partial patterns, the network can recreate the whole, he said. Interfaced with video or sound digitizers, neural networks can, in effect, "see" and "hear." "The exciting thing is that spreadsheet cells and database fields can also create patterns in the 'mind' of the neural net. Using outcomes of transactions as additional units in the patterns, an expert system can emerge from a database," Jenson said.

Nestor Inc. of Providence, R.I., is developing such an application. In its system, the network initially is trained with fields from mortgage application records and approval-denial outcomes determined for each application by an expert mortgage underwriter. By learning the initial application-outcome pattern, the program can take subsequent mortgage applications and complete approval or denial.

MacBrain works on the Mac Plus, SE and II, and will sell for $250. Version 1 constructs a RAM-based matrix to store up to 400,000 connections from a limit of 200 to 300 units per megabyte of RAM. Version 1.1 will facilitate modeling through the use of text-based and icon-based languages. It will feature full-color graphic support for the Mac II and the ability to save models in ASCII format.

Mechanical Intelligence of San Diego demonstrated the first parallel-processing board for the Mac. Its MI-4 for the Mac SE is based on the 32-bit Transputer chip from INMOS of San Jose, Calif.

The Transputer is a Reduced Instruction Set Chip (RISC) that can work in tandem with the 68000 and the 68020 chips. With a smaller instruction set, a RISC-based machine offers greater processing speed and requires less space on the chip to decode and execute instructions. By offloading math-intensive procedures onto the Transputers, applications such as computer-aided design and graphics production can be speeded up immensely.

What can users expect from neural network technology now? Bart Kosko of Verac Inc., program chairman of the neural network conference and one of the leading mathematical theorists in neural computing, said: "We will see desktop neural computing within two years. Within five years, neural nets will transcribe office dictations and compose graphic layouts for desktop publishing." ■

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Mac link allows real-time conversation

BY ELINOR CRAIG
MacWEEK Staff

CAMBRIDGE, Mass. — On-line history was made June 12, 1987, when Peter Olson, information engineer at Delphi, used his Macintosh to link CompuServe and Delphi for a real-time conversation among more than 15 people.

"It was the first time people on two networks could talk in real time," said Olson.

The key to linking the two services was Olson's application that used both of the Macintosh's serial ports simultaneously. The program interprets messages from each service and translates them into the proper format before sending them to the other service.

Conference participants included representatives from Apple; CompuServe of Columbus, Ohio; BIX, a byte information exchange; Delphi of Cambridge, Mass.; Hayes Microcomputer Products Inc. of Norcross, Ga.; FreeSoft, part of General Electric's GEnie information service; Dreams of the Phoenix Inc. of Jacksonville, Fla.; and assorted developers.

The purpose of this computer party line was to discuss the upgrade for MacBinary, the unofficial standard format for telecommunicating Mac files. MacBinary allows users to transfer files and keep the Finder information intact. The Finder information includes the icon, date created, type and creator.

Some participants were more interested in the event than the technology. "It was not a complicated feat. I was surprised Olson did it," said Chris Allen, president of Dreams of the Phoenix and MacBinary revision participant "I thought it was pretty neat."

"The new standard is of interest to the entire Mac community, and the conference should be made available to as many people as possible," said Olson. "MacBinary was originally a cooperative effort and because it affects all, all should have access," he said.

Olson, however, created the link unbeknown to either Delphi or CompuServe. "I knew that CompuServe would not approve," he said. "It was a philosophical point. The original effort was cooperative. It was unusual for a group to make MacBinary, and I wanted to continue the spirit of the project."

Delphi did not have a problem with the link, Olson said. They exchange information with UseNet and InfoNet. But, he said, CompuServe will not allow message threads to be moved to other services.

"The interesting point is that this many people cooperated on a project," said Neil Shapiro, system operator for CompuServe. He said, "The conference was a follow-up to the original conference on MAUG (an Apple users' group on CompuServe). We have always been the guiding force behind MacBinary." ■

Borland abandons low road with Reflex update

BY DANIEL RUBY
MacWEEK Staff

SCOTTS VALLEY, Calif. — Borland International reversed its long-standing policy of selling quality software at rock-bottom prices when it announced an upgrade of its Reflex database last week. At $279, Reflex Plus costs almost three times as much as Reflex.

The upgrade of the relational program offers significant new functionality, including calculated fields, table-style data-entry forms, larger record size and context-sensitive help. But the company admits the price hike represents a change of marketing strategies more than a technical improvement.

"This is a symbolic shift," said Louise Stanley, Borland's Macintosh marketing manager. "We recognize that we have to charge a reasonable price."

Registered Reflex owners can upgrade to the new version for $99.

The price hike from the company that helped pioneer low-price software seems to spell the end for Steve Jobs' dream that all Mac software would sell for less than $100.

Stanley said she expects Reflex Plus to sell at discount for about $185, compared with a street price of $59 for Reflex. At that low price, many customers did not appreciate the full value of the program, she said. "People thought it must be a runtime version."

Stanley said she positions Reflex Plus as a powerful, easy-to-use database. It does not contain all the features of a full-fledged application-development database system. Instead, it is aimed at serious users who want to perform ad hoc analysis on their data, she said.

Stanley said Reflex Plus occupies the middle ground between flat-file data managers like Forethought's FileMaker Plus and application-development tools such as Blyth Software's Omnis 3 and ACIUS' 4th Dimension.

Besides the problem of perceived value, Reflex's low price also made it difficult for dealers to carry the product because the margin for the seller was as low as $3 per copy. The price hike will help Borland crack the dealer channel, Stanley said.

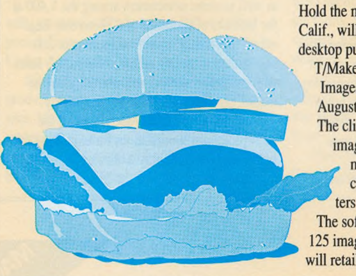
The higher price also allowed the company to develop collateral marketing programs and to completely revise the manual.

"All of these things improve the value of the product," Stanley said.

Reflex Plus, which is based on a program Borland acquired from Singular Software last year, is the cornerstone of Borland's growing Macintosh product line. The company also offers SideKick, Turbo Pascal, two Turbo add-on products and Eureka, an equation solver. Eureka lists for $195, but all the others remain priced at $99.95.

There has been speculation following Borland's acquisition of Ansa Software last month that Borland might develop a Mac version of Ansa's PC database product, Paradox. Stanley said Borland would be interested in such a product but noted that the two products might present a marketing conflict. ■

New on the menu from T/Maker: high-resolution clip art



Hold the mayo! T/Maker of Mountain View, Calif., will release high-resolution clip art for desktop publishing in September.

T/Maker will unveil ClickArt PostScript Images for Mac users at Mac Expo August 11 in Boston.

The clip art is vector-based, which defines images in terms of continuous mathematical operations, which means the clip art is easily scaled for newsletters or dinner invitations.

The software will come with more than 125 images on 1.6 Mbytes of disk space. It will retail for $129.95. ■

Aldus kicks off drive for training centers

BY MARY FRIEDLAND
Special to MacWEEK

SEATTLE — Help is on the way for desktop publishers distraught over the fruits of their labor. This month Aldus Corp. began enlisting a squad of independent trainers to pilot PageMaker users through the promised land of "easy and attractive documents."

Nine Authorized Training Centers (ATCs) have signed on with Aldus thus far, kicking off an Aldus drive to license 20 ATCs in the New York, Boston and San Francisco metropolitan areas by the end of the summer and 50 in major metropolitan areas by the end of this year.

"We see our leverage (in training) being most effective by using local staff," said an Aldus spokeswoman. ATCs must demonstrate expertise in PageMaker, principles of page design and instructional techniques. Aldus promises to support them with instructional materials, technical assistance and promotion.

The ATC program will form a three-pronged "pyramid of services," said Sandy Hogan, training manager for Aldus.

At the base of the pyramid are business software training companies. They will provide introductory training that "jump starts the user into keystroke proficiency," Hogan said.

Middle-level courses will be provided by universities and community colleges. These courses will focus on vertical applications such as advertising brochures and technical documents. "We haven't authorized any campuses yet, but we are looking at design schools that would teach PageMaker as a basic tool to undergraduates," Hogan said.

Capping the ATC pyramid will be a corps of desktop-publishing consultants capable of streamlining the publication efforts of an organization, creating PageMaker templates for publications and training end users.

Aldus is fleshing out a line of PageMaker document templates. Under a product manager that exclusively handles templates, the company now markets newsletter templates and expects to release a package of templates for standard business documents by the end of the year.

Authorized trainers are encouraged to sell Aldus templates and develop custom ones for their client base.

"One reason we want designers [as trainers] is for their ability to create templates," said Bryant. "A secretary can pour text files into templates and produce documents in an attractive, consistent company style."

Service Information Systems of Boston is an original ATC. A management consulting firm for political and non-profit organizations, the company recently added electronic publishing to its service line. And it is gearing up to enter the commercial marketplace.

"ATC status will give us credibility as trainers," said Michael Vittagliano, SIS marketing vice president. "We expect it to increase our client base tremendously."

Aldus sells a broad net of training products and services, including the PageMaker Classroom kit, on-site instruction and telephone support.

An additional training service, targeted at users who live outside ATC areas, is under way. Aldus is evaluating third-party PageMaker training packages for eventual endorsement and referral to registered users. "We want to support all the people who buy our products off the shelf," Bryant said. ■

CORRECTIONS

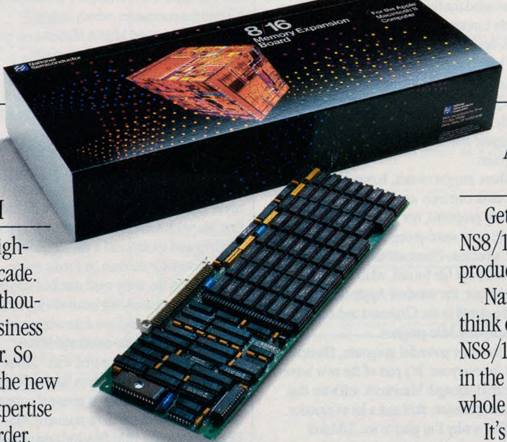
We reported May 18 that the original version of Quark XPress did not allow users to control the distance between text and the picture when using the automatic text-wrap feature. Desktop Publishing: Bove and Rhodes Inside Report (April 1987) was cited as the source of information. The report was accurately describing a demo version of XPress, but the shipped version did include a text offset feature that was described in the May issue of the report.

In our July 13 issue on Page 8, we printed that Future Soft will be shipping 3.0 of inTalk. Future Soft is the owner, but all marketing and releases will be done by Palantir.

In the June 29 issue on Page 13, we mentioned a software list titled MacGuide, published by MacMenu. MacMenu was in violation of the trade name MacGuide, a new quarterly computer magazine. MacMenu has ceased using the name.

National Semiconductor

We were ready for the Mac II almost before they were.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THE LONG VIEW

Lawrence Magid

I have a confession to make. I was a rotten math student. As far as my teachers were concerned, I had no aptitude for the subject. The same was true for art. However, since art classes were elective, I took the easy way out by avoiding them.

In the case of math, my problem was with arithmetic, not mathematics. I had trouble with long division and other tedious tasks. My artistic accomplishments were limited by my inability to draw a straight line, let alone interesting shapes.

Things have changed. By the time I finished graduate school, I was working with complex statistical equations. And I now find myself able to create simple yet pleasing illustrations.

I didn't become smarter or more talented. My mathematical abilities were enhanced by the hand-held calculator, computer terminal and, eventually, personal computer. My artistic talents, limited as they are, have emerged because of the Macintosh.

As far as math is concerned, the use of a computer ended the drudgery of arithmetic and allowed me to focus on the challenges of mathematics and statistics. I'm still not a mathematical wizard, but I have been able to develop my skills, unencumbered by mundane and time-consuming chores. Like millions of other computer users, I use programs like Excel to perform tasks that I was simply unequipped to handle in my precomputer days.

As aftermarket products for spreadsheets, several companies have developed "templates" to make people's lives even easier. A template is a fully or partially completed spreadsheet that frees the user from having to create one from scratch. A good template can make any of us look like a mathematical or financial genius.

As with spreadsheets, you also can buy templates for graphics programs. I recently was able to work with some ClickArt images from T/Maker Co. of Mountain View, Calif.

The prefabricated graphic images, created on the Mac by professional artists, are packaged in sets such as Business Images, Personal Graphics and Publications.

The only problem with ClickArt is that the images are bit-mapped MacPaint files and are therefore limited in resolution to the 72 dpi displayed on the Macintosh screen. The LaserWriter can print at 300 dpi, more than four times that resolution.

ClickArt was a great innovation in the early days of the Macintosh and the ImageWriter. But now that most business users have LaserWriters, people want software and data files that fully exploit their sophisticated hardware.

To that end, T/Maker is developing a new line of ClickArt images using Adobe Illustrator from Adobe Systems Inc. of Palo Alto, Calif., a recently released program that enables an artist to create images whose resolution is limited only by the printer or typesetting device used for final output. (PostScript-compatible Linotronic typesetters print at up to 2,540 dpi.)

These images can be imported into page-layout programs including Aldus' PageMaker 2.0, Quark XPress and, reportedly, Letraset's Ready,Set,Go! 4.0. They also can be used with Illustrator and some as yet unreleased programs.

These images cannot, however, be used with most currently available painting or drawing programs, nor can they yet be imported into most word-processing programs. That's because Illustrator uses an Encapsulated PostScript file format, which differs from QuickDraw, the standard Apple format that can be stored in the Clipboard and copied into virtually any Mac program.

Like other powerful programs, Illustrator isn't for everyone. It's part of the new wave of industrial-strength Macintosh software that requires patience, skill and a lot of practice.

That's why I'm glad to see T/Maker employ professional artists to provide PostScript images. A lot of business people need to use sophisticated graphics but do not have the time or interest to learn new programs. They want to be in the driver's seat but don't want to study road maps.

Unfortunately, there are currently only a few programs that can take advantage of Encapsulated PostScript files. If PostScript graphic images are to become a standard, they must be compatible with the vast array of Macintosh programs, including relatively easy to use word-processing programs. ■

Working Computer aims management ware ads at ad agencies

SAN DIEGO — Working Computer is aiming the advertising campaign for its new business management software at none other than advertising agencies.

The program, Clients & Profits, includes tools for estimating job costs, organizing schedules and generating invoices, with a focus on the specific needs of ad agencies that use the Macintosh Plus, SE or II.

Priced at $1,895 for a single-user version, the program is based on Blyth Software's Omnis 3 Plus relational database. Although it can be used as-is, the program can be adapted to suit the user's specifications by using Omnis 3 Plus. Omnis 3 support centers are available throughout the United States and Canada for technical advice on customizing.

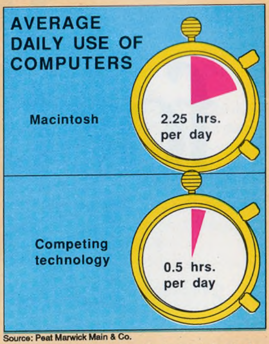
In the stand-alone version, Clients & Profits allows for estimating job cost, using standard expenses like artwork, typesetting and photography.

Working Computer can be contacted at P.O. Box 86602, San Diego, Calif. 92138; (619) 483-1453. ■

Study measures Mac productivity

BY STUART SILVERSTONE

Special to MacWEEK



Source: Peat Marwick Main & Co.

MONTVALE, N.J. — Businesses can reap productivity gains of 15 percent to 25 percent by using the Macintosh instead of other personal computers, according to a statistically rigorous survey of several major U.S. corporations recently completed by Peat Marwick Main & Co., one of the world's largest management consulting firms.

Although the study of Mac benefits was financed — in the six-figure dollar range — by Apple, participants said it was objective and independent of Apple's control. Apple gave Peat Marwick's consulting arm a list of corporate accounts from which to choose the participants. The management firm established consulting relationships with the companies without Apple's involvement. Peat Marwick advised the companies, which included Kodak, Du Pont and Martin Marietta, on how to use the Mac for greater productivity.

The companies studied requested that information on how they use Macs be confidential because they said they feared the information would aid competitors.

"They don't want reported how they achieved strategic gains and the ways they converted productivity gains to competitive advantage," said project director David Shay, Peat Marwick's manager of white-collar productivity and quality and a participant in the White House Conference on Productivity.

Shay said the study used standard survey techniques for measuring productivity, including dropping high and low data when averaging to exclude extreme emotional biases.

The Mac also is compared with "competing technology," which, given the small number of operating systems on personal computers, can be considered to be primarily MS-DOS systems like IBM PCs and compatibles.

Apple said the study was commissioned for its internal marketing and strategic planning and refused to make it public except for data presented at meetings like its business forums.

"We knew the Mac was better for productivity, but the study data was higher than what we thought," said a top Apple management official. "The higher productivity was not just internal to a particular shop but in the measure of the business studied: Sales organizations increased sales; technical publications divisions increased turnaround."

For example, the study found that regular and novice users averaged six applications on the Mac and only two on the "competing technology." For power users the same comparison was 13 to six in favor of the Mac. "Ease of use promotes use," said Shay.

"Seventy percent of all those interviewed had competing technology on their desks for at least two years, and some up to five years," Shay said. "Then many started using the Mac, and a few months later they told us that they are more productive, their output is increased and their creativity is improved. This is not from manual to mechanized tools. They have had personal computers either on their desks or around the corner on a shared machine."

The study also found that participants used the Macintosh 2.25 hours per day compared with 0.5 hours for the competing technology. "Small productivity gains over half an hour are hard to find," said Shay, "but 25 percent gains of more than two hours per day is significant. That's more than 2.5 hours per week. Over a month or even a year, for 100,000 employees, that makes a big difference."

For example, some companies found that by using Macs they needed fewer engineers to complete a project or could finish in half the time; and to win a competitive bid, they could offer additional services or a lower price.

"One company switched to using Stella simulation software on the Mac instead of a mainframe," said Shay. "They cut costs by one-third and out-of-pocket computer costs from $40,000 to $2,000."

Apple is analyzing the study to see how it can be applied to other market sectors. "It's the first study of personal computers in [office automation] with a serious methodology," an Apple consultant said. ■

QMS claims new PostScript printer is the fastest in its class

ATLANTA — QMS fired another salvo in the escalating PostScript-printer wars recently with the introduction of the PS 800 II, a printer that features dual paper bins and that the company said is the fastest laser printer of its class.

The PS 800 II, priced at $6,495 and based upon the Canon CXD engine, includes a Motorola 16-MHz 68000 microprocessor and the latest version of PostScript. It comes with 2 Mbytes of RAM and is expandable to 3 Mbytes. A QMS spokesman said the printer has a duty cycle of 10,000 pages per month.

The PS 800 II's two 250-sheet paper trays can use either letter- or legal-size paper and reportedly can be configured in two ways. The first method treats both bins as one large tray: When the first tray empties, paper is automatically drawn from the second tray. The second method allows the user to configure each tray with different sizes of paper.

QMS Inc. can be reached at P.O. Box 81250, Mobile, Ala. 36689; (205) 633-4300. ■

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Sculley predicts increase in Apple-DEC connectivity

BY RUSTY WESTON
MacWEEK Staff

PALO ALTO, Calif. — Mac users may be working with a stacked DEC of minicomputers and mainframes if John Sculley's recent talk to Apple analysts becomes reality.

Sculley, Apple's chairman, president and CEO, impressed the analysts by predicting that workstation sales might increase with Apple's machines and Digital Equipment Corp.'s VAX minicomputers working in tandem.

"There's quite a momentum with DEC users using Mac workstations," said Paul A.D. Evans, vice president of S.G. Warburg investment bank in San Francisco.

Sculley said Apple's sales figures show that last fall 19 percent of all DEC installations had at least one Mac on-line. By April of next year, that figure should rise to 31 percent, he said.

"The major advantage to DEC is Apple doesn't sell complete, large systems," said Bob Fried of Amherst, N.H., who operates Digital Village, an on-line information service for DEC users.

The relationship between Maynard, Mass.-based DEC and Cupertino, Calif.-based Apple may result in a joint venture, Fried said. "DEC is in an interesting position because it is competing with Apple in the workstation market, but at the same time, it is working with Apple to come up with an agreement on development and marketing."

Michael Orsak, an analyst with Robertson, Colman and Stephens, a San Francisco investment banking firm, said Apple wants to connect its workstations to the VAX environment because a large percentage of its installed base has VAX minicomputers.

"They can sell more and it makes it more valuable for people who already own VAX," Orsak said, although he also said he discounts the possibility of a formal alliance. "There probably won't be an agreement because DEC isn't sure if Apple is a competitor or an ally."

"In general, we don't talk about discussions in progress until there is something conclusive," said Bob Price, DEC's marketing programs manager. "I can't say whether we're working with them."

As to whether Apple is viewed as friend or foe, Price said, "To contrast working with them vs. competing with them would be difficult."

According to analysts who attended the recent briefing by Sculley at a Palo Alto hotel, DEC is clearly a friend of Apple's, notwithstanding DEC's recent price cuts in the workstation market.

Sculley said he thinks Mac and DEC would make a superior combination to IBM, although DEC is already the leading minicomputer company.

He said that thanks to the momentum generated by Apple's penetration of the office market, the company is poised to have the best quarter of its 10-year history.

The fourth quarter of Apple's fiscal year ends Sept. 25. If sales go according to Sculley's plan, revenue should rise 40 percent over the $510 million in sales a year ago, giving Apple its first $2 billion year. Last year, Apple turned in a record $1.9 billion in sales.

"My personal gut sense is if Sculley's talking about $725 million to $750 million, he wants to beat the range," said Evans. "I think it might be their best quarter ever, but they should do about $1 billion in the Christmas quarter, maybe more."

Orsak said the future looks bright for Apple stock prices — hovering at about $42 a share in recent weeks — because the company is looking to "ramp-up" manufacturing, which is backlogged with orders for the new Mac II. Sculley said the backlog for Mac IIs will end in October.

"The new products at the Mac Expo (in Boston Aug. 11-13) will be nice," Orsak said. "It will give them a big edge over the current IBM systems in terms of having neat things to do on a Mac. Opening up the Mac (architecture with plug-in board capability) was a big deal."

Sculley also said Apple would increase its national sales force by 25 percent and will increase advertising for the color monitor Apple IIGS in the fourth quarter. Apple would not disclose the size of its current sales force. ■

So long, shareware. New Red Ryder goes commercial

BY CLAIR WHITMER
MacWEEK Staff

SAN FRANCISCO — Red Ryder is the most widely used telecommunications software among MacWEEK readers, according to a MarketWEEK survey. It also has been one of the most-used shareware programs, but in its newest incarnation, Version 10.0, Red Ryder will leave the shareware channels and be sold by direct mail.

The program is due to ship in mid-August and is tentatively priced at $80; the upgrade from Version 9.4 probably will be available for $20.

Its developer, Scott Watson of The FreeSoft Co. in Philadelphia, partly attributes the change from shareware to commercial-ware to the bound documentation provided with the new version. Previously, the "manual" was downloaded from on-line networks, like the program was. But Watson also cited other reasons for the new change in a recent dialog with users in the FreeSoft area of the GEnie information database.

"The bound and printed documentation is not the only reason that 10.0 will not be distributed as shareware. It's not even the biggest reason. I do not own the name 'Red Ryder'; I license the trademark and have to play some things by [the owners'] rules in order to allow them to protect their interests," Watson said.

The current version of Red Ryder, Version 9.4, will continue to circulate as shareware, sans bound manual.

Red Ryder may no longer be free, but Watson said he thinks it's still a "tremendous bargain" and predicted it will be a blockbuster program.

However, he has remained very cagey about the new features of the program, which, he said, he has lost an immeasurable amount of sleep in creating. But throughout development, Watson's motto has been "Why one-up the competition when you can really kick their [butts]?"

Although Watson said speculation based on the beta versions is off the track, he said Red Ryder 10.0 will be compatible with the Mac II, support all Apple keyboards, support all on-screen fonts and font sizes, and provide an enhanced procedural language for macros and probably a phone book function.

Scott Watson: "[Red Ryder] 10.0 is worth the wait."

CHERYL UNGAR-PENDLETON

The hottest rumor about the program is that it will introduce breakthroughs in handling graphics on-line.

"I've got a full year of development into this one, and I finally came to the personal commitment to absolutely not compromise on the quality of this version. It has to be not only a work of science but also a work of art in my mind," said Watson about his creation.

In response to unhappy comments from users that he has been invisible on-line lately and therefore unavailable for questions about the new and old versions of Red Ryder, Watson said he was "guilty as charged." However, he justified his hermetic habits as being a result of an interstate move and the strain of being immersed in a development project.

As for delays in releasing Version 10.0, Watson cited the lack of management help and a C compiler that could write code for the Macintosh II.

"There was just no way that I was going to ship a product that did not work on a Mac II," Watson said.

But Watson promised his audience of users that he would get management help for dependable distribution of the software and that he knows "in my heart that 10.0 is worth the wait." ■

SNAPSHOTS

TOPS upgrade includes laser spooler, data translator

BERKELEY, Calif. — A new version of TOPS Network, enhanced with a LaserWriter spooler and a data translation application, began shipping July 17, according to Kim Crisswell, director of communications at Centram Systems West. TOPS is a local-area network that allows file sharing between PCs and Macintoshes.

"The TOPS Spool and TOPS Translators are the two features our Macintosh customers have requested most," said Nat Goldhaber, Centram president.

TOPS Spool, developed by Think Technologies Inc. of Bedford, Mass., is a print-spooler utility that allows the user to print in one application while working in another, spool documents to different printers and prioritize printing jobs.

TOPS Translators, developed by DataViz Inc. of Norwalk, Conn., converts file formats and contents between the Mac and DOS application programs. It maintains margins, tabs, print styles and other formatting commands when a file is opened in a different environment. Programs supported include Microsoft's Multiplan, Ashton-Tate's dBASE III, Lotus 1-2-3, Microsoft Word and MacWrite. Both new features will be shown at the Mac Expo in Boston this month.

Registered TOPS users can order upgrades directly from Centram for $29 until Sept. 15. Customers who bought TOPS after June 1 will receive the upgrade for free. Centram has added a special telephone line, (415) 549-5995, for users wishing to order upgrades.

Centram Systems West is at 2560 Ninth St., Suite 220, Berkeley, Calif. 94710; (415) 549-5900.

Working Software ships file-finding utility, spell checkers

MONTEREY, Calif. — "Finders Keepers, Losers Weepers" is the slogan under which Working Software Inc. has begun shipping a new file-finding utility called Findswell.

The company — formerly Greene, Johnson Inc. — also has announced Spellswell 2.0, an enhanced version of its popular stand-alone spelling checker, and Lookup, a new spelling checker in Desk Accessory form.

Unlike other file locators that work as Desk Accessories, Findswell is a system extension that installs a new button directly into the Open dialog box of any Macintosh application. Clicking on the button brings up a window in which the user can type all or part of a file name and launch the search. Findswell then displays the creation date, last modification date, size and type of all documents or folders that match the search criteria. Pressing Open or double-clicking will open the desired document.

Frequently referenced files can be earmarked to appear automatically in the Findswell dialog. Since the program remembers the path through the folder hierarchy to the documents marked, they can be opened immediately without a search. Priced at $49.95, Findswell will run on any member of the Macintosh family.

Spellswell 2.0 offers several improvements over the program's previous version. The new Spellswell checks Acta and Word 3.01 documents, has expanded proofreading capabilities and adds a feature for guessing the correct spelling of a word. Spellswell runs on any Macintosh computer and sells for $74.95.

Lookup is designed to search the dictionary for the correct spelling of a word the user has highlighted. Priced at $49.95, it will ship with the same 93,000-word dictionary that Spellswell uses as well as a smaller version for floppy-disk users. Both spelling programs are expected to be available at the Mac Expo in Boston.

Working Software Inc. is located at 321 Alvarado St., Suite H, Monterey, Calif. 93940; (408) 375-2828.

RealData software addresses effects of tax reform

SOUTH NORWALK, Conn. — The revised federal tax code is having the trickle-down effect of generating new work for Mac software developers who package investment scenarios.

When Congress passed the Tax Reform Act of 1986, it created the concept of "passive loss rules," giving real estate investors an extra dimension of worry.

RealData Inc., a real estate software-publishing house, recently released its "tax reform version" of its real estate investment analysis software for the Macintosh and IBM PC, which aims to clear up the new tax code, said spokesman Frank Gallinelli.

Gallinelli says the major tax changes "had to do with depreciation and passive losses, which gears the amount of tax shelter from a given property to the income of the investor."

The product, Real Estate Investment Analysis Version 5.1, retails for $195, with $48 upgrades available for registered users of earlier releases. The software offers pretax and aftertax rate-of-return calculations as well as revised capital gain calculations.

The company includes disclaimers that its software is not to be construed as legal or financial advice.

RealData can be contacted at P.O. Box 691, Southport, Conn. 06490; (203) 255-2732.

Design Software backup reportedly 80% faster than Apple's

WEST CHICAGO, Ill. — Macintosh users can now back up data from one Mac to another across an AppleTalk network using the DS BACKUP, recently released by Design Software.

Priced at $79.95, the program is based on a similar product for the IBM PC. According to the company, DS BACKUP works 80 percent faster than Apple's built-in copy routine, backing up 20 Mbytes of data in about 18 minutes.

Information can be copied from a Mac hard disk, including internal hard disks, to floppy disks or another hard disk. It is compatible with all Macintoshes and most Mac-compatible hard disks.

The utility does not back up automatically but graphically displays files and folders for selection in a hierarchical tree. It also can print a list of copied files. Disk status information, including the number of files, folders and the number of bytes in use and available, is presented.

Design Software is at 1275 W. Roosevelt Road, West Chicago, Ill. 60185; (312) 231-4540.

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M. Phillips, MacUser (UK), 8/86

"... the fastest BASIC available. The manual is my favorite too. The breadth of instructions in this BASIC is amazing. Even AppleTalk access is provided... an easy way to get fast compiled programs."

David, Kelly, MacTUTOR 8/86

"ZBasic isn't as well known as Microsoft's BASIC compiler, but it deserves to be. ZBasic provides excellent toolbox access, has a better head for figures, and is the only BASIC compiler that lets you edit and run programs with the same start-and-stop ease an interpreter provides."

Jim Heid, Macworld, 5/87

"If you are a BASIC programmer with a Macintosh, I can't recommend ZBasic highly enough... add a whole new facet to the way you enjoy your Macintosh..."

Neil Shapiro, MacUser, 12/86

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New laser printer may signal rise in GCC's fortunes

BY CLIFF LEHMAN
MacWEEK Staff

CAMBRIDGE, Mass. — The imminent introduction of General Computer Co.'s Personal LaserPrinter may add momentum to the company's recovery.

In the six years since its founding, General Computer has enjoyed huge success in two industries, survived the crash of one of them and is now fighting back from serious setbacks in the second.

GCC was founded in March 1981 when three Massachusetts Institute of Technology students decided to try their hand at designing video games. By June of that year, they had made their first sale and were off to a fast and lucrative start in research and development for the video-game market.

Three years later, the company had sold 73 video games to companies like Atari and Bally. Consumer sales of these games generated three-quarters of a billion dollars, according to Kevin Curran, GCC president and co-founder. Among GCC's most successful creations are Ms. Pac-Man, Centipede and Battle Zone.

But in 1984, the video-game industry crashed.

Moving quickly, GCC landed solidly on its feet in the Macintosh market with its introduction of HyperDrive, the first and, at the time, the only internal hard disk available for the Macintosh. HyperDrive, because it anticipated demand for Macintosh hard disks, played a big part in creating the Mac peripheral market.

But in the changeover from strictly doing

See GCC, next page

From left are General Computer executives Kevin Curran, president and CEO; John Tylko, vice president and chief operating officer; and Douglas MacRae, chairman.

HERB BETHONEY

Apple, Businessland team up to boost sales

BY RUSTY WESTON
MacWEEK Staff

SAN JOSE, Calif. — Apple Computer Inc. hopes to boost sales of Mac II and SE computers by teaming up with Businessland Inc. stores in a joint promotion beginning Aug. 17.

In addition, ComputerLand Inc.-owned stores will soon announce a new marketing promotion for the Mac II and SE computers, said Bob McMillan, president of ComputerLand-owned stores.

"It's reputed [Apple and the chain stores] are about to spend an awful lot more money supporting the Mac II," said Paul A.D. Evans, vice president of S.G. Warburg, a San Francisco investment bank.

The figure of $1 million for the AppleFund promotion was discussed in at least one trade publication, although neither Apple nor Suzanne Crocker, Businessland's vice president, would confirm it.

"It's probably going to be one of the larger event-oriented promotions that we have done," Crocker said. She said Apple and Businessland would share radio and newspaper advertisements, but they would not use television. Based in San Jose, Calif., Businessland has 94 locations in 33 states.

"It's not hard to spend $1 million once you start on this," Evans said. "The $1-million tag says it's important to both companies and I think that's true. Apple is doing the same thing with ComputerLand-owned stores (not the

See APPLE FUND, next page

Companies report sharp rise in quarterly profits

BY ELINOR CRAIG
MacWEEK Staff

Sharp increases in quarterly profits were announced recently by Apple Computer Inc., Silicon Graphics Inc., Apollo Computer Inc. and Microsoft Corp.

Apple reported third-quarter net income of $53.5 million, a 65-percent increase from the $32.3 million recorded in the same period last year. The earnings are based largely on widespread market acceptance of the Mac SE.

Sales for the quarter were $637.1 million, a 44-percent increase from the year-ago level of $448.3 million.

Half of Apple's third-quarter revenues were pegged to new Macintosh products, according to John Sculley, chairman, president and CEO.

Sculley said the increase exceeded corporate projections.

Senior technology analyst Bruce Lupatkin of Hambrecht and Quist Inc. in San Francisco said the glowing earnings report proves Apple's product transition "is going just fine.

"I think what we'll see is market acceptance of Mac II next quarter, if they get enough of them out the door," Lupatkin said.

Two workstation manufacturers streaked ahead. Silicon Graphics reported a 36-percent increase in profits compared with the same period last fiscal year, and Apollo Computer had a sevenfold jump in profits from last year.

Silicon Graphics, a Mountain View, Calif., manufacturer of superworkstations with 3-D graphics capability, reported net income before extraordinary item (due to income tax loss carryforwards) was $1.9 million, or 14 cents per share, for the fourth quarter, an increase of 36 percent from net income of $658,000, or 6 cents per share, from the same period last year. Net revenues for the fourth quarter were $29.1 million, an increase of 104 percent over the same period for the prior fiscal year.

"We have increased our manufacturing capacity and expect to be in volume production next quarter," said Edward McCracken, president and CEO of Silicon Graphics.

One reason for Silicon Graphics' increased profits was an income tax benefit. The company also attributed its large increase in profits to strong demand for products. Sales have doubled in all markets, according to Beverly Toms, director of corporate communications.

Apollo reported its second-quarter net income was $7.6 million, or 21 cents per share, a jump of 630 percent over its income of $1 million, or 3 cents per share, for the second quarter of 1986. Sales for the quarter were $132.2 million, up 50 percent over sales of $88.4 million for the same period a year ago.

The Chelmsford, Mass., company said its growth reflected strong sales to existing customers and the addition of 150 new accounts during the quarter, raising its total number of accounts to more than 2,100.

The company said it benefited from the burgeoning market for workstations, used largely by engineers and graphic artists who design on the large screens.

Microsoft's results surprised industry analysts who expected even better results. For the final quarter, which ended June 30, Microsoft reported net income of $17.3 million, or 62 cents per share, up 50 percent from $11.5 million, or 42 cents per share, a year earlier. ■

3Com and Bridge agree to merge

BY CLAIR WHITMER
MacWEEK Staff

SANTA CLARA, Calif. — Networking giant 3Com Corp. is striding down the merger aisle again, and this time Bridge Communications Inc. is waiting at the altar.

The two companies have announced a definitive merger agreement. The proposal must wait for shareholders' blessings, expected at special shareholder meetings in early October, before the merger becomes effective.

3Com has announced two such agreements before, neither of which became a reality. In late 1985, 3Com announced an agreement with Convergent Technologies of San Jose, Calif. The deal fell through in March 1986 when 3Com investment bankers advised against it because of changes in Convergent's portfolio.

3Com also attempted to buy Centram Systems West of Berkeley, Calif., in January. However, after Sun Microsystems made a bid for Centram, 3Com dropped out.

If the merger proceeds, Bridge will become a wholly owned subsidiary of 3Com and will retain its offices in Mountain View, Calif. 3Com will give its name to the combined company and will be the company's headquarters in Santa Clara. Under the proposal, Bridge shareholders will own 42 percent of the combined company after exchanging each share for 1.4 shares of 3Com stock.

3Com manufactures networking systems for workstation workgroups, including software, network adapter cards, dedicated networking workstations and file servers. The company recently announced a Mac module for its file-server software, 3+ for the Macintosh, which reportedly provides transparent integration of Mac and MS-DOS computers.

Bridge Communications provides local-area network products that focus on connectivity between work groups to minicomputers and mainframes. It has been an OEM customer of 3Com for two years.

The feeling inside both companies is that the merger is almost certain, according to Judith Estrin, currently the executive vice president of Bridge Communications.

A joint proxy statement and prospectus on the merger is due this month, as well as a quarterly report from 3Com. Although he prefaces his opinion with "anything can happen," analyst John Girton of Birr Wilson in San Francisco said the merger is likely to be approved by stockholders in October.

"Bridge has been selling at a higher valuation than 3Com. 3Com stock has been flattish lately, but the deal still looks pretty lucrative for Bridge shareholders. When you have a friendly merger, the board of directors are in concurrence and the deal has been pronounced fair by investment analysts, there's a good chance [it will go through]," Girton said.

3Com reported earnings of $3.2 million on sales of $31.6 million last quarter. Bridge earned $1.8 million on sales of $17.1 million for the quarter ending July 4. ■

APPLEFUND

Continued from previous page

franchise stores). The Businessland relationship is regarded as prototypical."

"We recently submitted a marketing plan to Apple that was received extremely well," McMillan said. He said the majority of ComputerLand's 38 company-owned stores would participate in the "high-profile" venture. ComputerLand is based in Hayward, Calif.

Apple will send sales representatives to demonstrate the Macintosh II and Macintosh SE, and the Businessland sales force reportedly will earn bonuses for selling Apple products.

AppleFund is a cooperative advertising program created by Apple to help dealers publicize products. For every $10,000 worth of Apple products sold, Apple kicks $200 into the advertising fund. Corporate approval is required before dealers can spend the money.

"Apple has been trying to improve relations with dealers for a long time and with some success," Evans said.

The promotion is "an interesting development and a signpost for the future." he said.

Meanwhile, John Sculley, Apple chairman, president and CEO, recently told a group of analysts Apple is expanding its national sales staff by 25 percent. The company will not disclose how many sales people it employs.

Apple will not be opening up storefronts for direct sales in the near future, Evans said.

He said Apple is starting a new program to bring "complete convergence" between dealers and Apple salesmen. Convergence means the salesman gets paid whether the buyer goes directly to Apple or to a dealer, said Evans. ■

GCC

Continued from previous page

research and development to marketing its own products, the company lost a lot of good people, said Brad Parker, a former GCC engineer.

"HyperDrive was stellar. It was awesome," said Parker. "I got interviewed by the press. I got obnoxious. I got a swelled head."

HyperDrive's popularity helped GCC dominate the Macintosh hard-disk market, earn a reputation for innovative products for the Mac market and record revenues of more than $50 million in a little more than two years.

But it was not all clear sailing. Because of problems involved in fitting the drive into the Macintosh, Apple withdrew its warranty from machines outfitted with GCC's HyperDrive. Apple later reversed its opinion of HyperDrive, but the disk also had quality-control problems.

Moreover, GCC's domination of the peripherals market was undermined by Apple's development of the SCSI port in 1986. High-speed SCSI drives by companies like SuperMac Technology and Personal Computer Peripherals Corp. grabbed huge shares of GCC's previously uncontested market.

Mark Flanagan, GCC vice president of marketing and sales, blames most reliability problems on the hostile electronic environment inside the Mac and on suppliers' unannounced changes in components.

But Flanagan also said: "We've put significant resources behind solving reliability problems; we learned a lot about manufacturing from the experience. Reliability problems caused problems for us, distributors and end users, but we're through that."

Earlier this year, the company reorganized some of its operations, resulting in a series of layoffs. The layoffs were part of a reorganization and refocusing that businesses go through all the time, Flanagan said. "I think you'll see GCC rehiring in big numbers," he said.

Others are more skeptical. GCC's "fundamental blunder was they thought they were the tail that could wag the Apple dog," said Steve Edelman, president of SuperMac, a competitor.

GCC did not pay enough attention to Apple, Edelman said, so SuperMac was able to beat it to the punch with SCSI drives. GCC's entry in the Mac network market, HyperNet, also failed to keep up with Apple's system changes. Apple's hierarchical file system caught GCC flat-footed.

"One can be proud in this market, but one must be humble in some terms because Apple sets the standards. Don't try to make networks or anything else until you know what Apple is doing," Edelman said.

But during the development of its Personal LaserPrinter, GCC said it stayed in close contact with Apple. Despite rumors that Apple has been changing QuickDraw and developing its own QuickDraw laser printer, GCC said it is confident.

"I think we have a very close working relationship with Apple," said John Ison, GCC's marketing director.

GCC, according to Flanagan, is changing. The introduction of its new Personal LaserPrinter is proof that the company is now focusing on what it does best, he said. ■

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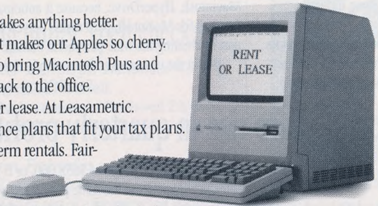

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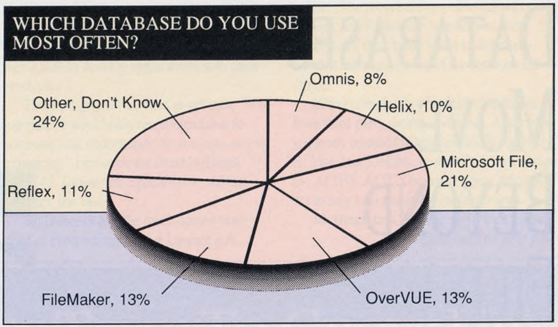
Focus: Database software

BY BILL LANGENES
Creative Strategies Research

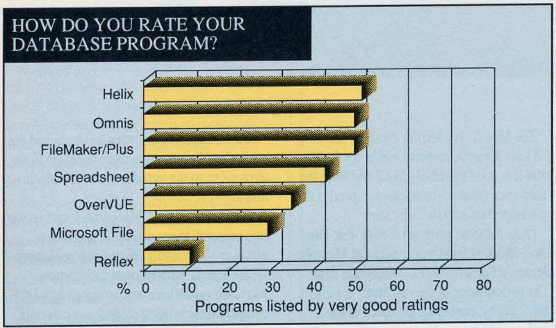
Macintosh computers are used to manage data by 82 percent of Mac users surveyed by MacWEEK. Fifty-six percent of those surveyed use a database program, and an additional 26 percent don't have a database program but use a spreadsheet program for data management.

These findings come from a MarketWEEK telephone survey of 300 Macintosh users conducted exclusively for MacWEEK by Creative Strategies Research in June.

Six flat-file and relational programs share most of the database market. Microsoft File from Microsoft Corp. of Redmond, Wash., holds the largest share at 21 percent, followed by 13 percent for OverVUE from ProVUE Development Corp. of Huntington Beach, Calif.; 13 percent for versions of FileMaker from Forethought Inc. of Sunnyvale, Calif.; 11 percent for Reflex for the Mac from Borland International of Scotts Valley, Calif.; 10 percent for versions of Helix from Odesta Corp. of Northbrook, Ill.; and 8 percent for versions of Omnis from Blyth Software of San Mateo, Calif. Twenty-four percent of respondents use other databases or did not know which brand they use.



Source: June 1987 Creative Strategies/MacWEEK



Source: June 1987 Creative Strategies/MacWEEK

Most users pleased with their program

The database users surveyed were generally well-satisfied with their program. All programs received a "very good" rating by more than 10 percent of users and three programs were rated "very good" by at least half of their users. A "poor" rating was given to only four database programs by a very small portion of users.

As an indication of the high level of data management activity, just over half of those with a database program also use a spreadsheet program to manage data.

Among those surveyed, the Macintosh is used for data management by 77 percent of Mac 512K users, 81 percent of Mac Plus users and 93 percent of Mac SE users.

In overall user satisfaction, Helix ranked first, followed in order by Omnis, FileMaker and OverVUE. Microsoft File, the most widely used database, ranked next to last.

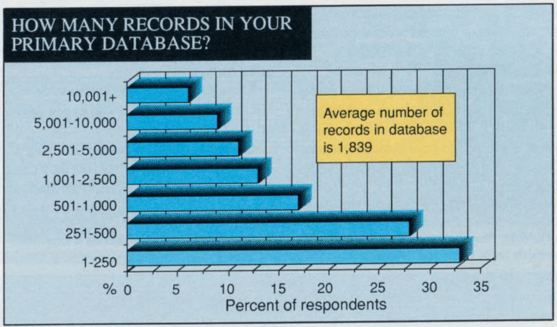
Most databases contain fewer than 500 records

The MarketWEEK survey indicates that Mac users are active database users who maintain medium to small amounts of data.

More than half those surveyed said their databases have 500 records or less. About one-third of these databases contain 250 records or less. The median number of records in respondents' databases is 500.

Because the largest Macintosh user database in the survey holds about 20,000 records, the average number of records in a database program file is 1,839. In contrast, the size of a typical spreadsheet database is smaller, holding an average of 996 records.

Generally, the typical relational database holds more records than the typical flat-file database. No significant differences were found in the size of the typical database among the four models of Macintosh computers.



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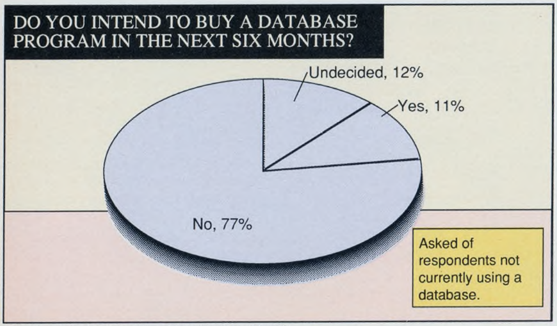


Source: June 1987 Creative Strategies/MacWEEK

Demand not expected to increase soon

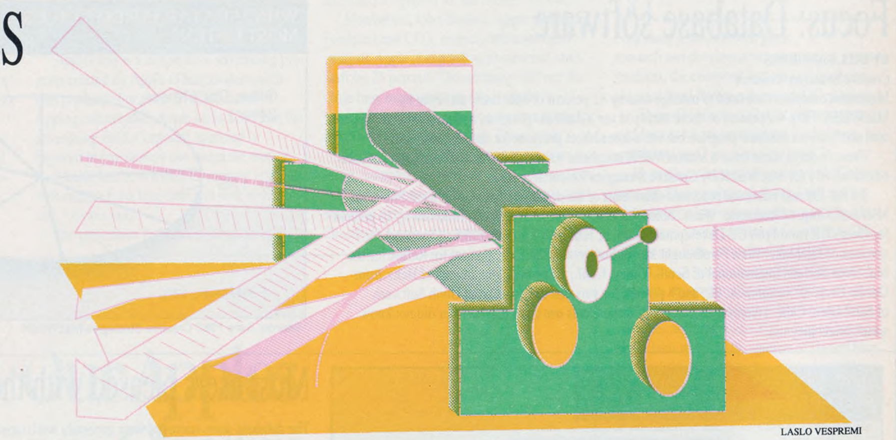
Database marketers should not expect a significant buying demand for database programs from current non-database users during the next six months, according to the responses of those surveyed.

Eleven percent of non-data base users surveyed intend to buy a database within the next six months and 12 percent are undecided, but 77 percent do not intend to buy a database.

Among those who plan to purchase a database program, 47 percent buy most of their software from retailers, 33 percent by mail order, 7 percent direct from software publishers and 13 percent from other sources.

The MarketWEEK survey is conducted exclusively for MacWEEK by Creative Strategies Research, a high-technology research and consulting firm based in Santa Clara, Calif. For this survey, U.S. corporate and other volume users were randomly selected from the MacWEEK subscriber database and surveyed by telephone during June. Three hundred questionnaires were obtained with a response rate of 96 percent.

DATABASES MOVE BEYOND FILE HANDLING



LASLO VESPREMI

BY AVERY JENKINS
Special to MacWEEK

Driven by new technology and a greater acceptance of the Macintosh by the business community, database software for the Mac is rapidly advancing from its former second-class status among Mac applications.

Mature database products such as Omnis 3 Plus by Blyth Software of San Mateo, Calif., are being revised, while new products such as CAT, a recent release from Chang Labs of San Jose, Calif., and 4th Dimension from ACIUS of Cupertino, Calif., are being introduced to take advantage of what many developers see as an imminent explosion in the Macintosh database market.

Users once had to make do with the limited file-handling capabilities of such applications as Microsoft File from Microsoft Corp. of Redmond, Wash., or Jazz from Lotus Development Corp. of Cambridge, Mass. — products whose databases are ill-suited for larger, more complex applications. On the high end, Blyth's Omnis could handle more intensive database applications but has been hampered by its lack of graphic capabilities and the programming knowledge required to put the program to use.

But the new products, as well as the latest iterations of older database software, are promising to combine both ease of use and performance.

Dash Chang, president of Chang Labs, said the new developments mean that it is an "all-out war" for the database market.

"It's going to be deadly," Chang said. "You've got Omnis 3, the existing standard; you've got a powerhouse called Ashton-Tate; and you've got this highly touted start-up called ACIUS."

Chang Labs itself is a newcomer to the Macintosh database market with its new product, CAT.

Chang and others say part of the driving force behind this change, from both the technical and marketing perspectives, is the Macintosh II.

The Mac II "is a terrific database machine," said Lori Thomas, marketing director for Blyth Software. It is "incredibly fast," and from the database developer's standpoint, "speed is the most important criteria," she said.

"Any database program is very disk-intensive," said Ron Rankin, president of MicroResources, a Lewisberry, Pa., consulting firm. "The performance of the disk itself is significant," and by increasing the speed of the machine's I/O, you also increase the speed of the database, he said. "With respect to the Mac II, it is simply blazingly fast."

While other database developers similarly exalt the Mac II's speed, Becky Waring, editor of the Boston Computer Society's Macintosh newsletter, Active Windows, said the database companies may have an ulterior motive.

Many of the more popular databases, she said, "are really slow. … They are incredibly slow." By speeding up the computer itself, she said, database products get a free performance boost.

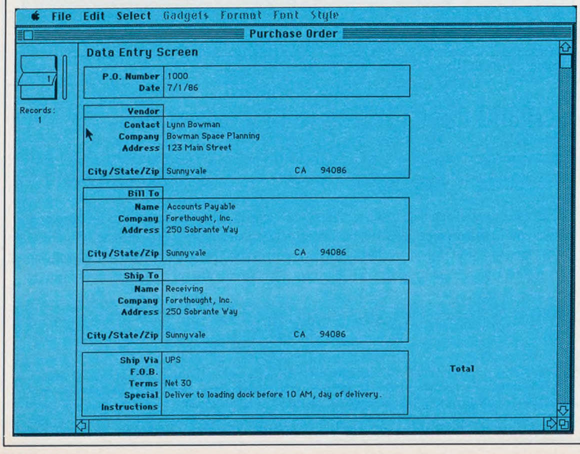
However, there are other less technical reasons why Macintosh database users are likely to profit from the introduction of the Macintosh II.

While the original Macintosh found its way into corporations as a specific single-task machine — primarily for desktop publishing — the Mac II, with its open architecture, increased capabilities and promised MS-DOS compatibility, is being pushed as a corporate workstation that far exceeds anything that IBM or the clone manufacturers offer. Even IBM's new line of microcomputers, the PS/2, has been cited by some market watchers as an attempt on IBM's part to emulate the better aspects of the Macintosh.

Most Macintosh database vendors agree that the Macintosh II is opening doors into large corporations. The expansion of the Mac market is creating a window of opportunity through which they all want to enter. New or improved database packages are the result.

"Apple is succeeding in a monumental way

A FileMaker Plus purchase-order data-entry screen has been designed for visual clarity and ease of entry. This same data can be viewed and manipulated in a variety of modes.



Data Entry Screen

P.O. Number 1000
Date 7/1/86

Vendor
Contact Lynn Bowman
Company Bowman Space Planning
Address 123 Main Street
City/State/Zip Sunnyvale CA 94086

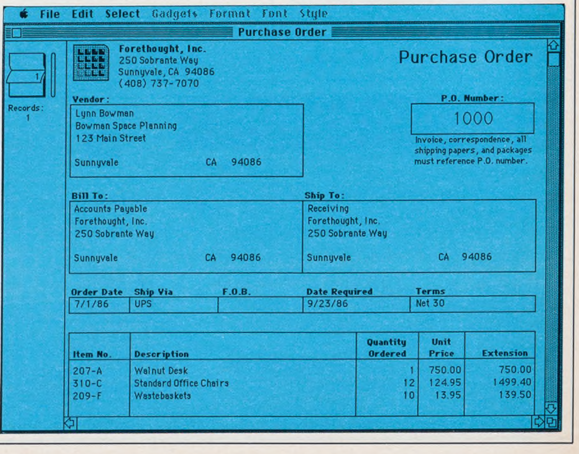
Bill To
Name Accounts Payable
Company Forethought, Inc.
Address 250 Sobrante Way
City/State/Zip Sunnyvale CA 94086

Ship To
Name Receiving
Company Forethought, Inc.
Address 250 Sobrante Way
City/State/Zip Sunnyvale CA 94086

Ship Via UPS
F.O.B.
Terms Net 30
Special Instructions Deliver to loading dock before 10 AM, day of delivery.

Total

FileMaker Plus has more flexible form tools than most other database programs, but its lack of alignment tools can make designing forms such as this tedious.



Forethought, Inc.
250 Sobrante Way
Sunnyvale, CA 94086
(408) 737-7070

Purchase Order

Vendor:
Lynn Bowman
Bowman Space Planning
123 Main Street
Sunnyvale CA 94086

P.O. Number: 1000

Invoice, correspondence, all shipping papers, and packages must reference P.O. number.

Bill To:
Accounts Payable
Forethought, Inc.
250 Sobrante Way
Sunnyvale CA 94086

Ship To:
Receiving
Forethought, Inc.
250 Sobrante Way
Sunnyvale CA 94086

Order Date	Ship Via	F.O.B.	Date Required	Terms
7/1/86	UPS		9/23/86	Net 30

Item No.	Description	Quantity Ordered	Unit Price	Extension
207-A	Walnut Desk	1	750.00	750.00
310-C	Standard Office Chairs	12	124.95	1499.40
209-F	Wastebaskets	10	13.95	139.50

in penetrating corporate accounts," said Gary Chappell, marketing director for Chang Labs. And although Chang Labs has traditionally been a developer for the CP/M and MS-DOS markets, the company saw the wide-open spaces created by the Mac's entry into the corporation. The Macintosh corporate database market is still relatively new and has no established leaders, a factor that presents an opportunity for newcomers, according to Chappell.

Others see it the opposite way. Some developers say that to achieve success in the corporate world, the Mac II must have good database applications. A database is often a primary reason for purchasing a microcomputer, and without powerful databases to back it up, the Macintosh II may have more difficulty gaining acceptance.

But the question of which database to use on the Macintosh can be difficult to answer.

Blyth's Thomas said the Mac's ease-of-use factor makes it an excellent choice for the everyday data-crunching database. Applications such as order entry and inventory, where clerical or even temporary help is responsible for entering the data, are excellent for the Macintosh because even those employees who are not computer-literate can be rapidly trained, she said.

But Daniel Cheifetz, president of Odesta Corp. of Northbrook, Ill., said since the Macintosh is often first brought into a company as a desktop-publishing machine, a natural first database application would be to manage mailing or distribution lists.

He also said databases can be built to include graphic information such as blueprints, schematics or designs. Because of its superior graphics, the Macintosh, he said, can be put to good use here as well.

Waring said she is often called upon to answer the "which database?" question. In general, she said, the database you need depends on the size of the business.

First of all, she said, the databases included as part of integrated packages are just too limited for anything but the most simple applications. They are too slow and lack the necessary report-generation capabilities and storage capacity for even a small-business database.

After looking at some of the databases included in these packages, "It amazes me that they call that a database," she said.

But if your business runs to about $100,000 per year and if your database requirements are limited, a package such as FileMaker Plus from Forethought Inc. of Sunnyvale, Calif., is the one she recommends.

This program is "very powerful in the forms area," making it easy to create new reports quickly. The program comes with some standard-form templates that can be used as-is or modified for special needs.

Without the template, she said, a user has to make a number of dry runs with the printer, examining the output and modifying the report generator by adding spaces and changing margins until he gets the form he needs.

"Before this program came out, that's exactly what people did," she said. But FileMaker's templates "are wonderful."

Unlike some of the higher-end packages, FileMaker Plus is not a relational database, which can limit its usefulness in some applications. It can work with only one file at a time. So, for example, if you have an order-entry database and an inventory database, you must first enter the order in the order-entry database and then, as a separate step, modify the inventory database.

A relational database, which can link several files together, can perform such an operation in a single step. Using the example above, when a new order is keyed in, a relational database can automatically update the inventory database at the same time.

High-end databases such as Omnis 3 Plus or Odesta Helix are capable of more complex tasks — but at a cost. It often takes a programmer's skill to develop applications with these products.

These programs "are hard to get into," Waring said. "I would only recommend that to someone who understands the concepts of programming." However, the latest high-end entry, 4th Dimension, appears to avoid that problem, she said.

4th Dimension is the much-touted brainchild of French programmer Laurent Ribardiere. The program enjoyed initial success in Europe, and Ribardiere himself was soon imported to the United States to develop a North American version of the database for Apple.

Citing complaints of unfair competition from third-party database vendors, Apple subsequently released Ribardiere and his publisher, Marylene Delphis, to start their own company, ACIUS. ACIUS began shipping the product in July to enthusiastic initial reviews.

4th Dimension, Waring said, "looks to be

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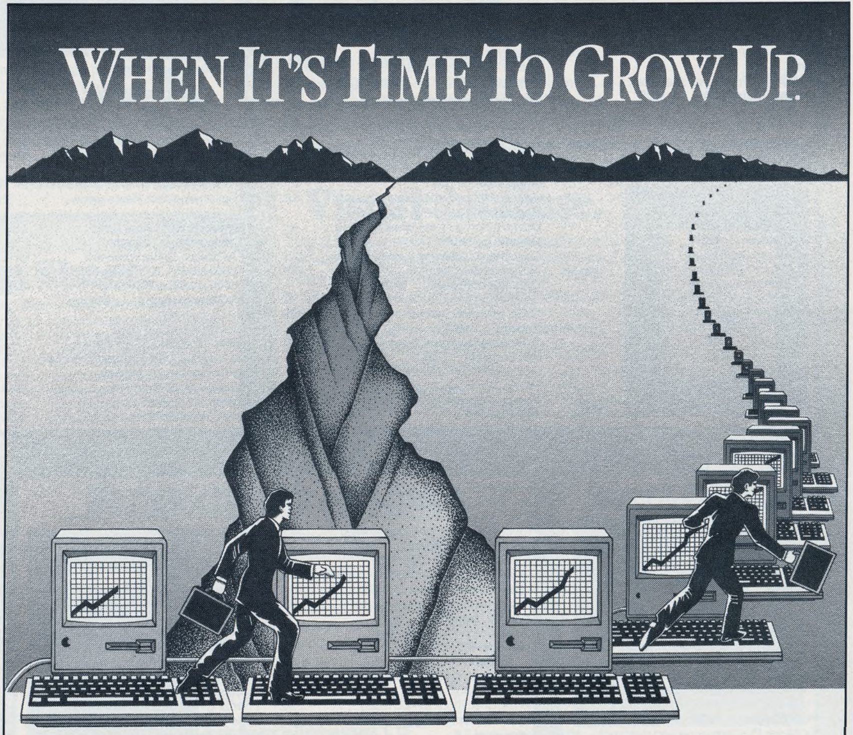
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Hardware and software for the business Mac.

SOFTWARE

NCP denotes not copy-protected.
CP denotes copy-protected.

Aegis Development ... NCP	
Doug Clapp's Word Tools	$42.
Affinity Microsystems ... NCP	
Tempo *(power user's macro utility)*	55.
ALSoft ... NCP	
DiskExpress *(maximize disk performance)*	27.
Altsys ... NCP	
FONTastic Plus *(advanced font editor)*	49.
Fontographer *(Laserwriter font editor)*	245.
Ann Arbor ... NCP	
FullPaint *(advanced Paint program)*	53.
Berkeley System Design ... NCP	
Stepping Out *(requires 512k)*	59.
Blyth ... CP	
Omnis 3 Plus *(multi-user available)*	call
Borland International ... NCP	
Sidekick 2.0	59.
Reflex *(information management analysis)*	59.
Turbo Pascal *(HFS compatible)*	59.
BrainPower ... NCP	
Graphidex *(DA graphics organizer)*	69.
Designscope *(electronic circuit design)*	129.
StatView 512+ *(req. external drive, 512k)*	179.
Bravo Technologies ... NCP	
MacCalc *(easy to use spreadsheet)*	79.
CasadyWare ... NCP	
Fluent Fonts *(two-disk set)*	29.
Fluent Laser Fonts *(Vols. 1-15)*	*each* 48.
Central Point Software ... NCP	
Copy II Mac *(includes MacTools)*	20.
Challenger Software ... NCP	
Mac3D *(3D graphics, CAD features)*	119.
Chang Labs ... CP	
Rags to Riches Ledger or Payables	125.
Rags to Riches Receivables *(req. 512k)*	125.
The C.A.T. *(Contacts, Activities, Time)*	199.
Inventory Control	243.
Professional Billing	243.
Cortland ... NCP	
TopDesk 2.1 *(7 new desk accessories)*	34.
Cricket Software ... NCP	
Statworks *(statistical package)*	77.
Cricket Graph *(multiple windows)*	127.
Cricket Draw *(advanced draw capabilities)*	177.
Data Tailor ... NCP	
Trapeze *(spreadsheet, reqs. 512k)*	173.
DataViz ... NCP	
MacLink Plus *(transfer Mac/IBM data)*	159.
Digital, etc. ... NCP	
Turbo Maccountant *(GL,AP,AR,Payroll)*	262.
Dow Jones ... CP	
Market Manager Plus 1.5	159.
Dubl-Click Software ... NCP	
World-Class Fonts! *(both Volumes)*	49.
WetPaint Clip Art *(both Volumes)*	49.
Enabling Technologies ... NCP	
Easy3D *(create solid 3D objects)*	89.
Pro 3D *(3D shaded modeling)*	199.
Forethought ... NCP	
FileMaker Plus *(feature-packed database)*	159.
PowerPoint *(professional presentations)*	249.
FWB Software ... NCP	
Hard Disk Backup *(protect hard disk info)*	38.
Hard Disk Partition *(speeds up hard disk)*	38.
Hard Disk Util *(program backup)*	56.
Ideaform ... NCP	
MacLabeler *(print disk labels)*	29.
DiskQuick *(catalog floppies & hard drives)*	29.
Imagine ... NCP	
Smart Alarms *(DA reminder system)*	38.
Industrial Computations ... NCP	
Powermath *(equation solving tool)*	59.
Infosphere ... CP	
LaserServe *(LaserWriter spooler)*	65.
MacServe *(AppleTalk software)*	175.
Innovative Data Design ... NCP	
MacDraft *(new updated version, 512k)*	159.
LaserWare ... CP	
LaserWorks *(requires 512k, Laserwriter)*	$229.
LaserPaint *(requires Mac Plus, Laserwriter)*	375.
Legisoft/Nolo Press ... NCP	
WillWriter 2.0 *(prepare your own will)*	31.
Letraset ... NCP	
Ready,Set,Go!3	249.
Linguist's Software ... NCP	
Tech *(1000 different symbols)*	59.
Foreign language fonts	call
Living Videotext ... NCP	
More *(outlines, windows, & tree charts)*	158.
Lundeen & Associates ... NCP	
WorksPlus Spell	39.
Micro Analyst ... NCP	
Mac Zap *(recover crashed hard disks)*	36.
Microsoft	
Basic Interpreter 3.0 *(NCP)*	64.
Chart 1.02 *(42 chart styles, CP)*	72.
Multiplan 1.1 *(63 col. by 255 rows, CP)*	105.
File 1.05 *(flexible data manager, NCP)*	111.
Basic Compiler 1.0 *(NCP)*	119.
Fortran 2.2 *(compiler, NCP)*	169.
Works 1.0 *(integrated tool, NCP)*	189.
Excel 1.04 *(power spreadsheet, NCP)*	224.
Word 3.0 *(word processor, NCP)*	239.
Mindscape ... CP	
GraphicWorks 1.1 *(newsletters, posters)*	48.
Monogram ... NCP	
Dollars & Sense *(home, small business)*	81.
Odesta ... NCP	
Double Helix *(relational, custom menus)*	275.
Multi-User Helix *(requires 512k)*	439.
OWL International ... NCP	
Guide *(hypertext, free-form info)*	79.
Guide Envelope System	109.
Palantir ... NCP	
inTalk *(communication to emulation)*	99.
PBI Software ... NCP	
HFS Locater *(DA organizer for HFS)*	26.
HD Backup *(supports MFS, HFS)*	29.
Personal Computer Peripherals ... NCP	
HFS Backup	32.
ProVUE Development ... NCP	
OverVUE 2.0 *(power-packed database)*	149.
Satori ... NCP	
BulkMailer *(mailing lists)*	74.
BulkMailer Plus *(up to 90,000 names)*	225.
Legal Billing *(attorneys to accountants)*	385.
Legal Billing II *(full trust accounting)*	575.
Project Billing *(architects to engineers)*	445.
Silicon Beach Software ... NCP	
Silicon Press *(printer utility, 512k)*	41.
SuperPaint *(advanced graphics program)*	54.
Software Discoveries ... NCP	
Record Holder Plus *(data manager)*	45.
Software Ventures ... NCP	
Microphone 1.1 *(includes Glue™)*	119.
Solutions, Inc. ... NCP	
SmartScrap & The Clipper	41.
Glue *(creates "print to disk" capability)*	41.
State of the Art ... CP	
Electric Checkbook *(print checks)*	28.
SuperMac Technology ... NCP	
SuperSpool 3.4	49.
Diskfit *(backup & restore utility)*	49.
SuperLaserSpool	99.
Multi-User SuperLaserSpool	259.
Survivor Software ... NCP	
MacMoney *(financial planner)*	42.
Symmetry ... NCP	
Acta 1.2 *(outline/writing desk accessory)*	38.
PictureBase *(clip art manager, 512k)*	44.
T/Maker ... NCP	
ClickArt Personal Graphics, Effects, Publications, Letters Vol. 1 or 2, Holidays, Business Image	*each* 28.
Bombay, Plymouth, or Seville Laser font	46.
Write Now *(word processor)*	102.
Think Technologies ... NCP	
Laserspeed *(Laserwriter utility)*	65.
Lightspeed Pascal *(includes debugger)*	85.
Lightspeed C *(top-rated C Compiler)*	$125.
InBox Starter Kit *(CP)*	235.
InBox Personal Connection *(Mac & PC)*	call
TML Systems ... NCP	
TML Source Code Library	58.
TML Pascal *(compiler, req. 512k)*	68.
TrueBasic ... NCP	
True BASIC *(ask about special)*	59.
Algebra 1 or II, Pre-calculus, Trigonometry, 3D Graphics, Discrete Math, Probability, Chippendale utilities & Calculus	*each* 35.
TrueSTAT *(statistics)*	58.
Runtime *(create stand-alone applications)*	59.
William & Macias ... NCP	
myDiskLabeler *(design & print labels)*	24.
myDiskLabeler w/Color *(req. Imagewriter II)*	33.
myDiskLabeler w/Laserwriter option	38.
Working Software ... NCP	
Spellswell *(spelling checker)*	45.

HARDWARE

Manufacturer's minimum limited warranty period is listed after each company name. Some products in their line may have longer warranty periods.

Note: Some hardware items are available in either platinum or beige color. Please specify.

20 Megabyte SCSI Hard Drive	569.
AST Research ... 2 years	
AST Turboscan *(300 dpi scanner)*	1479.
AST 2000 *(20 MB, 20 MB tape)*	1479.
AST 4000 *(74 MB, 60 MB tape)*	3895.
Curtis Manufacturing ... lifetime	
Diamond *(6 outlets)*	29.
Emerald *(6 outlets; 6 ft cord)*	36.
Sapphire *(3 outlets; EMI/RFI filtered)*	47.
Ruby *(6 outlets; EMI/RFI filtered; 6 ft cord)*	55.
Dove Computer ... 90 days	
MacSnap Memory Upgrades	call
Ergotron ... 1 year	
Mouse Cleaner 360°	15.
MacTilt or MacTilt SE	74.
MacBuffer 512k	329.
MacBuffer 1024k	429.
Farallon Computing ... 1 year	
PhoneNET PLUS *(DB-9 or DIN-8)*	39.
Hayes ... 2 years	
Smartcom II *(communications software)*	88.
Smartmodem 1200	299.
Smartmodem 2400	449.
InterBridge *(connect Appletalk networks)*	659.
IOMEGA ... 90 days	
Bernoulli Box *(dual 20 MB w/SCSI)*	1879.
Bernoulli Box *(dual 10 MB, Appletalk)*	call
Kensington ... 1 year	
Appletalk Cable Clips or Connectors	*each* 1.
Mouse Cleaning Kit w/Mouse Pocket	17.
Disk Drive Cleaning Kit	20.
Tilt/Swivel	22.
Universal Copy Stand	24.
Polarizing Filter or Surge Suppressor	34.
System Saver Mac or Control Center	64.
A-B Box *(for the Mac Plus)*	64.
Turbo Mouse	85.
Koala Technologies ... 90 days	
MacVision *(digitizer)*	175.
Kraft ... 1 year	
3 Button Quickstick	39.
Migent ... 1 year	
Pocket Modem *(ext. 1200 baud)*	175.
Mirror Technologies ... 1 year	
Magnum 800 External Drive	209.
Magnum 20 Tape Backup	899.
MagNet 40/40 *(40MB, 40MB tape)*	2395.
MagNet 20x *(w/cable)*	779.
MagNet 30x *(w/cable)*	949.
MagNet 40x *(w/cable)*	1299.
MagNet 85x *(w/40MB tape)*	3995.
Nutmeg Systems ... 1 year	
Nutmeg 19″ Monitor	1579.
Personal Computer Peripherals ... 1 year	
MacBottom HD 21MB *(SCSI)*	$859.
MacBottom HD 21MB *(SCSI)* with modem	999.
MacBottom HD 45MB *(SCSI)*	1285.
Summagraphics ... 90 days	
MacTablet 12″ x 12″ *(sketching)*	379.
Systems Control ... 2 years	
MacGard *(surge protection)*	55.
Thunderware ... 90 days	
ThunderScan 4.0 w/Power Port	199.
Western Automation ... 1 year	
DASCH RAMdisk 2000k	459.

DISKS

Sony 3½″ DS/DD Disks *(box of 10)*	20.
Fuji 3½″ DS/DD Disks *(box of 10)*	20.
MAXELL 3½″ DS/DD Disks *(box of 10)*	21.
Verbatim 3½″ DS/DD Disks *(box of 10)*	21.
3M 3½″ DS/DD Disks *(box of 10)*	21.

INFORMATION SERVICES

CompuServe	
CompuServe Information Service	24.
Dow Jones	
Dow Jones News/Retrieval Membership Kit	24.

ACCESSORIES

I/O Design	
Imageware II *(Imagewriter II carry case)*	49.
Macinware Plus *(Mac Plus carry case)*	69.
Macinware SE *(Mac SE carry case)*	89.
Kalmar Designs	
Teakwood Roll-top Case *(holds 45 disks)*	14.
Teakwood Roll-top Case *(holds 90 disks)*	21.
Teakwood Roll-top Case *(holds 135 disks)*	29.
Moustrak	
Moustrak Pad *(standard 7″ x 9″)*	8.
Moustrak Pad *(large 9″ x 11″)*	9.
Sensible Softworks	
"MacAttire" covers for 512k, Plus & SE	7-17.
High Trek Mac Plus or SE carry case	call

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- If we must ship a partial order, we never charge freight on the shipment(s) that complete the order.
- No sales tax.
- All U.S. shipments insured; no additional charge.
- APO/FPO orders usually shipped 1st Class Mail.
- Allow 1 week for personal and company checks to clear.
- UPS Next-Day-Air available.
- COD max. $1000. Cash or certified check.
- 120 day limited warranty on all products.*
- To order, call us anytime Monday thru Friday 9:00 to 9:00, or Saturday 9:00 to 5:30. You can call our business offices at 603/446-7711 Monday through Friday 9:00 to 5:30.

SHIPPING

Note: Accounts on net terms pay actual shipping. **Continental US:** For printers and hard drives add 2% for UPS ground shipping (call for UPS Blue or UPS Next-Day-Air). For all other items, add $2 per order to cover UPS shipping. We will automatically use UPS 2nd-Day-Air at no extra charge if you are more than 2 days from us by UPS ground. **Hawaii:** For printers and hard drives, actual UPS Blue charge will be added. For all other items, add $2 per order. **Alaska and Outside Continental US:** Call 603/446-7711 for information.

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Maximum

Adding memory's a Snap.

If you're using your Mac for business, you want to spend your time computing, not flipping disks in and out. With *MacSnap 2s* from Dove Computer Corporation you can have a bunch of programs at your click and call, because it more than doubles the amount of RAM on a Mac Plus or Mac SE (from 1 Mb to 2.5 Mb). That means you have RAM room for more than twice as many programs (depending, of course, upon their size). Using Dove's RAM disk utility, not only do you eliminate disk swapping, but, with everything in RAM, you greatly increase your operating speed. *MacSnap 2s* can be further expanded to 4 Meg and is compatible with most internal peripherals. See our Tip Sheet for more information on memory upgrades.

Dove Computer's MacSnap 2s ... 90 days **$659**
(Call for prices on other Dove memory upgrades).

Spool yourself!

You've just started printing your report on the effect of electronic zithers on the "Silicon Sound." Now you'd like to switch over to your 3-year projection factor on the long-term ramifications of your new data. But you've got to cool your jets 'til the printing's done. Not with *SuperSpool* (for ImageWriter I & II printers) or *SuperLaserSpool* (for LaserWriter and ImageWriters). They'll take over the print managing, while you get on to bigger and better things. Both are transparent (work in the background), are compatible with all major applications, and work on both floppy and hard disk systems.

SuperMac Software (not copy-protected)

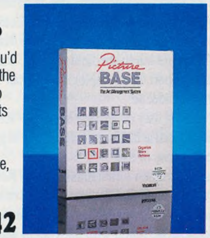
SuperSpool 3.4 (for 512, 512E, MacPlus & SE)	**$49**
SuperLaserSpool 1.1 (for 512, 512E, MacPlus & SE)	**$99**
Multi-User SuperLaserSpool 1.1 (for 512, 512E, MacPlus & SE)	**$259**

Tip Sheet.

Name: Casey Schnackenberg **Claim to fame:** Enjoys ice fishing at -15°F.

"So you originally bought your Mac just to keep a little database, and now you're an inveterate computer jock with a 16-hour-a-day habit and a vast library of software. These things happen. It's time you got more RAM. Why? To minimize the constant back and forth between RAM and disk. To keep a whole lot of programs active. And to do things like manage your printer while doing other computing (it's called print spooling). Hard drives minimize disk swapping, but RAM upgrades are the thing for faster computing. Dove Computer offers memory upgrades for the Mac 512, Plus, SE and II. Call us for details.

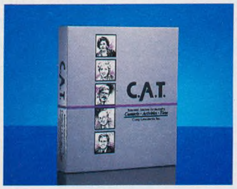
Visual database.



You probably never realized how many different graphics you'd use (and create yourself) when you bought your Mac. Now the problem is to find a convenient place to keep them, ready to re-use at your slightest wanton whim. Get *PictureBase*. It puts graphics at your fingertips fast, even when you're in other applications. And, with the multi-user license available from Symmetry, you can even share graphics through AppleShare, MacServe, or other AppleTalk file servers.

Symmetry's PictureBase 1.2
(not copy-protected, for 512, 512E, MacPlus, SE & II) **$42**

C.A.T. for your mouse.



C.A.T. stands for Contacts, Activities, Time: i.e. it keeps the Who, What, and When of every event related in a single database. Enter and look for information based on a contact person, activity (meeting, letter, phone call, etc.), and/or when it happened. *C.A.T.* constantly updates your files, and generates reminders, schedules, memos, etc. based on that data. This is an exciting and powerful new management tool. Compatible with the Macintosh 512, 512E, Plus, SE and II.

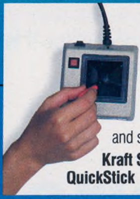
Chang Labs
C.A.T. 1.0 (copy-protected).... **$199**

Design circuits on screen.

Attention all you people with an engineering bent! Or even a mild inclination thereto. *Designscope* from BrainPower lets you develop up to 254 component block diagrams for digital and analog circuits on screen, assign parameters to each block, and then simulate the completed circuit. So you can catch problems before you start designing component circuitry. There's a truly tongue twisting variety of component blocks available, including amplifiers, analog switches, voltage sources, noise generators, flip flops, one shots, and more.

BrainPower's Designscope 1.15
(not copy-protected, for 512, 512E, MacPlus, SE & II) **$129**

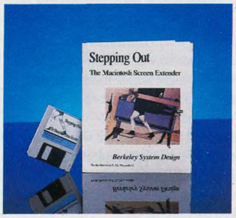
Shift into high gear.



What's a high-speed daredevil like you doing with that wimpy little mouse on your desk? Accelerate into those cursor corners with a Kraft Systems 3-button *QuickStick*. The same fast response and click action as a mouse, combined with the speed and sheer unadulterated fun of a joystick.

Kraft Systems
QuickStick ... 1 year.............................. **$39**

Screen Control.



No more squinting. No more mysterious objects crawling outside of your field of vision. *Stepping Out* gives you the ability to move through pages in a single slip of the mouse *without scrolling*.

And it has a few other handy features, such as letting you zoom in on your screen (with 2X to 16X enlargement) or see the big picture (with 2X or 4X reduction). All of which makes *Stepping Out* a great program for any design or desktop publishing application. Compatible with the Macintosh 512, 512E, Plus and SE.

Berkeley System Design
Stepping Out 1.1 (not copy-protected) **$57**

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Easily modifiable databases difficult to locate

Charles W. Rice, exposition manager for the Manufacturing Jewelers and Silversmiths of America, a Providence, R.I.-based trade association, is a man addicted to databases.

At the recent Apple Business Exposition in Boston, he could be found hovering around the booth housing Forethought's FileMaker Plus or the demonstration of ACIUS' 4th Dimension, the latest entry into the database market.

"We have a large IBM mainframe," Rice said, "but we use Macs for particular projects." Most of these projects, he said, are graphics oriented.

Rice uses databases to manage some of the association's lists, to keep track of floor plans at trade shows and to print badges for exposition visitors. But "I'm not a programmer," Rice said, "I don't know anything about code."

Like many other users, Rice wants what is, on the face of it, two incompatible features: powerful data-manipulation capability combined with an easily developed system. Many of his users are out in the field, he said, where constant support of a complex system can become a headache.

"I'm a big user of turnkey systems," Rice said, and because of his user base, "my biggest problem is ease of use."

The association's first database was Reflex, the low-cost relational database from Borland International of Scotts Valley, Calif. But one of the problems he found with the system was that the menu could not be customized to fit a particular database. Unless the user was very familiar with the system, Rice said, he could easily make the wrong menu choice, thereby causing problems with the database.

Rice said he also considered Ashton-Tate's dBASE MAC, which had already been announced when he was looking for a database. He bought Reflex instead, for two reasons. The first — and most obvious — was that it was currently available.

The second reason was that when checking with people who had beta copies of the Ashton-Tate program, he found that they received with the disks a 1,200-page manual. And that made him nervous, he said.

The underlying message behind extensive documentation is that a lot of manual may mean a lot of work is required to develop an application, Rice said.

Since he is not a professional computer expert, Rice said, one of the most important elements in choosing a database is that it must be forgiving of errors.

For example, he must be able to go back into the database to change field names or lengths or to add and delete fields or even the relationships between different files.

With some products, "you can't go back and correct the errors," Rice said. "I want the ability to go back and correct errors in omission."

But Rice said he is hopeful that new products, like 4th Dimension, that allow extensive modifications after the database has been designed will provide him with the flexibility and ease of use he needs. — *By Avery Jenkins*

Continued from previous page

both high end and easy to use." It is "a very interesting combination." Indeed, according to others, it is an impossible combination. 4th Dimension, according to Thomas, is an "unstructured, complex product. It is a high-end development environment," Thomas said, that is "not easy to use." He also said Blyth recently released Omnis Express, an application generator that makes it easier for non-programmers to develop applications.

Omnis Express lets users identify the fields and field attributes, while it generates the files structure, screen and report layouts for the database.

But despite Omnis' maturity and indisputable power, 4th Dimension already has gained converts. John David, a systems analyst for Syscom Inc., a Hempstead, N.Y., consulting firm, said, "We have used [4th Dimension] as a beta version, and it is just amazing." Despite the fact that Syscom is a registered Omnis developer and is listed in the Omnis Business Directory, David said he will "most positively" be using 4th Dimension for development projects in the future.

David said 4th Dimension combines the best elements of other databases. Like Omnis, 4th Dimension gives the application developer control over elements such as data entry and allows him to develop turnkey, customized applications that give the user only the menu choices that are necessary, as well as specialized menus that are application-specific.

But Omnis, which was not originally developed for the Macintosh, lacks graphics capabilities, David said. Omnis, which has often been cited for its speed in comparison with other

Continued on next page

These Fortune 500

General Motors **Exxon** Ford Motor **IBM** Mobil **General Electric** AT&T **Tex**
Nabisco Shell Oil **Boeing** United Technologies **Procter & Gamble** Oc
Rockwell International Allied-Signal **Eastman Kodak** Dow Chemica
Petroleum **Xerox** PepsiCo **Standard Oil** General Dynamics **Kraft** Coca-C
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National Starch & Chemical **Timken** Esselte Business Systems **Harco**
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Raychem **A.H. Robins** Tandem Computers **GAF** Amdahl **Briggs & St**
Bausch & Lomb **Storage Technology** Telex **Snap-on Tools** Loral **B**
Computer Cameron Iron Works **Intergraph** Westmoreland Coal **Cra**
Manufacturing **Harte-Hanks Communications** Advanced Micro Devi
Bard Foxboro **Phillips Industries** Herman Miller **Stanadyne** SCI Sys
Xidex Fleetwood Enterprises

...read Mac

Continued from previous page

high-powered databases, gained that speed by not being dependent on the Macintosh's bit-by-bit storage of graphics data.

Databases such as FileMaker Plus have much better graphics ability, David said. And the combination of these two elements in 4th Dimension helps make it a very appealing product.

4th Dimension's performance, even in the beta-test version, appears to be satisfactory, David said. In comparison, when he saw a demonstration of Odesta's Double Helix, "I was blown away," he said.

But after developing a small application with Double Helix, he "found out it was not good at all."

"It's very slow," he said.

But Odesta's president said Helix's advantage lies in the fact that it is a graphics-based package. Helix does not use any procedural language, so no coding is involved in developing a database with it, Cheifetz said.

"What we have done," he said, "is use object-oriented programming in an icon-based environment."

Another new entry that has been noted for its performance problems is dBASE MAC, from PC database powerhouse Ashton-Tate of Torrance, Calif. Ashton-Tate is the developer of dBASE, the most widely used database on the IBM PC. But the company has not had similar success in the Macintosh world.

After receiving mixed reviews of the prerelease version, reviews that cited awkward use and performance problems, Ashton-Tate postponed the release of dBASE MAC for several months to fix the program's problems before making a general release of the product, which is expected soon.

Max Rivera, an Ashton-Tate sales engineer, said the problems with dBASE MAC have hurt the company. "The stock took a beating" because of dBASE MAC, he said, adding that there is little crossover from the dBASE users in the IBM environment to the Macintosh environment.

With a market that is expected to grow substantially and with several new products being released, one of the ways developers are looking to separate themselves from the pack is by providing multi-user versions of their products.

Blyth Software released a multi-user version of Omnis earlier this year. Marketing Director Thomas said the multi-user capability is becoming more important to Blyth's customers.

"One-half to two-thirds of our customers buy the single-user version with the expectation that they will buy the multi-user version in the future," Thomas said.

She said about 30 percent of the company's customers use the Macintosh in a work group, making database connectivity an important issue for them.

According to Thomas, Blyth is working on a version of Omnis that will run on both IBM PCs and Apple Macintosh computers linked in a local-area network. She also said this is becoming more important as the Macintosh II sidles its way into corporations.

Odesta also supports multi-user operations, but to a greater extent than that currently available with Omnis.

Using Multi-User Helix running on a VAX machine, Cheifetz said, Macintosh users can access departmental databases without having to resort to terminal emulation.

And through a VAX-SNA gateway, he said, users can have mainframe database information downloaded from an IBM mainframe into the VAX version of Helix and from the VAX into their Macintosh workstation.

Chang Labs has taken a different approach. Citing the fact that eight out of the top 10 Ashton-Tate database applications are used for names and addresses, Chappell said Chang Labs based its product on the need for contact management. Chappell called the product a "dedicated relational" database. Its name, CAT, is an acronym for Contacts, Activities and Time.

The database, Chappell said, is specifically designed for managing those three elements for individuals. Rather than emphasizing the workstation element of "personal workstation," CAT emphasizes the personal side.

The database engine was developed for an accounting package that Chang Labs had developed earlier. But rather than package the engine itself as a database development tool and attempt to be all things to all people, Chappell said the company decided to focus on these three database needs in the business environment.

But whatever the database need, it appears that the Macintosh will soon be able to support it. From the simpler, flat-file databases to complex relational database application environments, it appears that Macintosh users of all levels will benefit from the latest database wars. ■

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... SCANNING THE NEAR FUTURE

Visiting the Image Studio

A new generation of gray-scale processing tools promises to make in-house publishing more efficient and more cost effective than before. MacWEEK previews pre-release versions of two products that break new ground in image processing.

PAUL MORRELL

BY STEVE ROSENTHAL
Special to MacWEEK

Programs that let the Macintosh work with multiple shades of gray are just around the corner, and program publishers say the results will be stunning.

Combined with a new generation of peripheral devices, packages from Letraset of Paramus, N.J., and others will extend Macintosh processing to cover photographs, shaded artwork and composite images.

Gray-scale tools are definitely important. While at first glance it might seem that monochromatic tools would pale in the face of the Macintosh's recent embrace of on-screen color, graphics professionals point out that in the real world of publishing and commerce one-color images predominate. And even though most large-scale reproduction ultimately is done with images composed of single-intensity dots, the creation and processing steps usually involve shades of gray.

Essentially, gray-scale processing lets you draw, scan or capture a video image while preserving the brightness of each point as one of a specified number of levels. You can then display, store or edit the image, still preserving a brightness level for each defined tiny picture element (pixel). If you print out the image on a high-resolution device, the gray levels can be simulated by even smaller dot patterns.

Applications include photo and art preparation for integration into desktop-publishing documents, image processing, advertising layout and artistic creation. Although some of that work is now being done on workstation-level machines such as those made by Sun Microsystems and Apollo Computer, most of it is currently accomplished with the more traditional tools of razor blades, airbrushes and graphic cameras.

The electronic image-editing process is exploding because all the factors are falling into place on the Mac, according to Mike Rennert, product manager at Letraset. Gray-scale processing needs software at both the application and system levels, an exchange standard between programs and the hardware to acquire and reproduce the printed images, he said.

Letraset's new offering, which the company plans to call Image Studio, is an example of how that software will operate. Based loosely on the familiar MacPaint-style painting program, the package is intended for serious artists and desktop publishers who need to manipulate images for reproduction. Letraset says it will exhibit Image Studio at the Mac Expo in

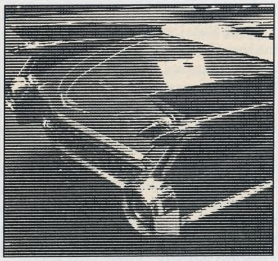


Image Studio's halftone settings allow you to create screens like this horizontal line screen with 30 dpi.

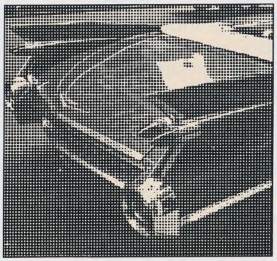
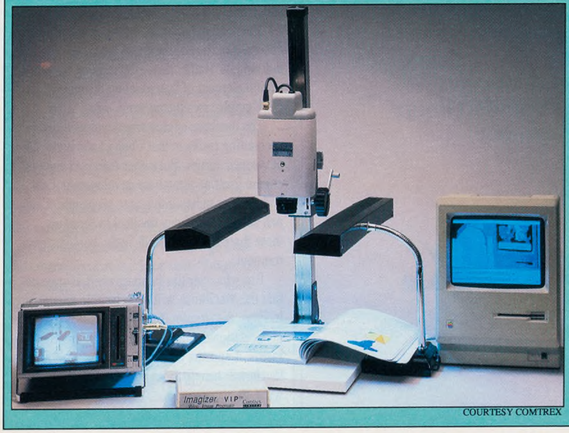

The program also can create custom screens such as this halftone screen with 30 dpi.

Image scanning breakthrough



COURTESY COMTREX

The first major development in image-scanning technology since the development of relatively inexpensive scanners has arrived. The $2,500 Imagizer from Comtrex Ltd. of El Toro, Calif., digitizes video images to produce halftones with up to 256 shades of gray and 2,450 dpi.

Sophisticated software provided with the Imagizer allows users to incorporate newspaper-quality photographs in documents printed on 300-dpi PostScript printers, and magazine-quality photographs in documents printed on a Linotronic 300 typesetter.

Imagizer software is used to adjust contrast and brightness and for cropping and sizing images. For additional fine tuning, users could produce the image with one of the sophisticated new gray-scale and color-separation programs such as Image Studio from Letraset of Paramus, N.J.

The hardware consists of a video camera and a proprietary digitizer. The digitizer represents a major part of the technological breakthrough. The unit, about the size of a standard external modem, converts scanned images into PostScript files.

Imagizer can be used to scan art and stationary objects. Comtrex spokesmen said the company will soon release an interface for a Canon still-video camera that will enable Imagizer to capture all images, completely bypassing traditional photography and darkrooms.

Comtrex has announced that the device will support four-color separations later this year. Color pictures in magazines actually are composed of tiny dots of four colors of ink. The traditional method of printing these pictures is to use a color separator to create a transparency for each color. Commercial color separators

Boston this month and ship final copies sometime this fall.

In its prerelease incarnation, Image Studio offers a dozen different drawing tools and a palette of gray tones. The inking tools, including Pencil, Airbrush and Paint Can, use the currently selected gray tone rather than MacPaint's original choice of black, white or limited black-and-white dot patterns.

Three of the new tools, however, clearly set Image Studio apart from previous paint programs. A Water Drop selection blends regions together, as does a Finger tool that smears together existing points and regions. A Charcoal Stick darkens existing images. All three, as well as the other image-editing tools, can operate at scales from 25 percent to 1,600 percent of normal.

Using just these tools, it's possible to do most of the touch-up and picture editing that is needed in professional graphics applications. For example, Rennert said, if your company president has a pimple on his nose the day you're supposed to get a picture for the monthly newsletter, you can smooth over the offending spot electronically.

You also can do a lot more than that, said Bert Monroy, beta tester and freelance illustrator. In his experiments, he has taken pictures of company executives stationed in different parts of the country, then electronically combined them into a single image. With care, he said, the result looks like a single photo rather than a pasted-together composite.

Manipulating the gray scales directly also leads to some startling effects, Monroy said. Along with drawing tools, Image Studio provides a TransferFunction or GrayMap window, a feature that allows any originally drawn or scanned gray level to be displayed and output as any other value in the total range.

Normally, of course, the lightest input levels map to the lightest outputs and darkest to darkest, so what you see and what you print is the same as what came in. By inverting the gray map connection, you get the darkest original as the lightest output and vice versa, thereby creating an electronic negative.

You can also make the relation non-linear, increasing contrast or making the picture more homogeneous. If a picture has been underexposed or overexposed, you may be able to bring it back into the normal range by this form of electronic manipulation. By decreasing the number of gray-scale steps, you can also make special artistic effects such as "posterization."

Image Studio provides two methods of selecting transformations. You can simply draw a line across the GrayMap box. A rising 45-degree straight line represents a linear positive mapping. Or, you can use two slide controls, one of which sets overall brightness — the vertical position of the curve — and one that sets contrast — the steepness of the slope. If you're so inclined, you can even vary the brightness of selected levels by drawing such a twisted curve for the transfer function that the relationship between the original and the transformed image is barely recognizable. Providing you have enough memory, you can always try out a setting and then undo it.

If you get into serious image editing, you can also choose from a set of seven "enhancements," such as Resharpen, Blur or Trace Edges. These settings apply a corresponding mathematical transformation to the image, resulting in a picture that is changed in hundreds or thousands of subtle ways. You can then go on to edit selected regions by hand. Of course, all these features would be of limited use if you couldn't view or print the results. Right now, say gray-scale program testers, you'll do best on the viewing side with a Macintosh II and Apple's 13-inch monochrome monitor. With a standard video card, this monitor can display up to 16 shades for each point and up to 256 shades if you fill the video board

Continued on next page

commonly used today costs more than $250,000.

If Imagizer is used to make separations directly, the photographic transparency step can be bypassed, a savings of $75 to $150 per image compared to using a commercial service.

Comtrex also has announced that process-color toner cartridges for the LaserWriter printer will be shipped later this year. These will allow users to make color keys and transparencies directly on the LaserWriter.

Because Imagizer is a PostScript device, color separations produced on the LaserWriter can serve as proofs for transparencies that will ultimately be printed on a Linotronic 300. This will result in additional savings.

These advances represent significant progress towards the day when the entire publication process can be brought in house at substantial savings over methods used today. — *By Jiri Weiss*

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Continued from previous page

with the optional 256 Kbytes of memory. You can also see the same result on a color monitor such as the Spectrum from SuperMac Technology of Mountain View, Calif., but in general, monochrome monitors cost less and show a sharper image.

The prerelease version of Image Studio will run on a Mac Plus or SE, but the grays have to be simulated with patterns of the relatively coarse on-screen dots of these machines, so you're less able to see the effect of finely-detailed changes. You're also working with a physically and logically smaller screen, which means you view a smaller region of the picture.

For printed output, all gray-scale programs will do much better with high-resolution output devices such as the Linotronic imagesetters than with 300-dpi laser printers such as the LaserWriter. Because it takes as many as nine printed dots to represent one gray level out of 256, a 300-dpi laser printer only provides an effective resolution of about 33 dpi when used for this type of gray-scale work.

On the high-resolution devices, there are more dots available to represent each pixel, so gray tones can be simulated with dot patterns without dropping below the dot density that is obvious to the eye. However, preparation and editing work can be done with lower-resolution printouts, and the final copy run off by a service bureau, if necessary.

Incidentally, if you're a true halftone expert, with Image Studio you can tell the system how you want your pixel-to-dot pattern translation done. One menu choice lets you send to PostScript devices like the Linotronic a message telling it what simulated screen to use as it electronically translates pixels to dot patterns. In addition to several standard screens, there's a custom choice that lets you specify the halftone angle (the direction the patterns run in the output) and the resolution.

Inputs for gray-scaling programs theoretically can come from a variety of sources, but publishers such as Letraset say they expect the majority of images will be input from high-resolution gray-scale scanners. Companies such as Microtek of Gardena, Calif., and Abaton of Pleasanton, Calif., have begun delivering 300-dpi scanners that deliver from four to 16 gray levels for each point. Even the venerable ThunderScan now produces multiple gray-level images as do several video digitizers that can take inputs from a camera or video recorder, although both only at resolutions significantly lower than 300 dpi.

Tying the image-producing and the gray-scale editing programs would be difficult without a standard exchange file, and that also is taking shape. TIFF (Tag Image File Format), developed by Aldus and Microsoft, can represent images created on both Macintoshes and IBM PCs and is rapidly achieving universal acceptance among scanner manufacturers as well as the authors of desktop-publishing programs. Although the basic format covers all types of scanners, there is a subset aimed at gray-scale devices.

Letraset's prerelease version of Image Studio, for example, reads TIFF as well as the native files created by ThunderScan and MacPaint. On the output side, it saves images in its own format, TIFF, MacPaint and Encapsulated PostScript.

The recent extensions to the Macintosh itself, say gray-scale aficionados, also will play an important part in facilitating image processing, particularly the provision for larger memories. Each doubling of the number of gray levels takes an extra memory bit for every pixel in the image, so a 64-level gray-scaled image requires six times as much memory as a purely black-and-white image.

That means that an 8-inch-by-10-inch photo, for example, scanned at 300 dpi by the lower-quality process of simulating tones with pixel patterns takes about 880 Kbytes of working memory (less on a disk where it can be stored in compressed form). That same image scanned at 64 true gray levels takes about 5 Mbytes. And an 11-inch-by-17-inch image, within the range of some of the larger PostScript printers and typesetting devices, would require close to 16 Mbytes.

Scanner makers and program publishers are betting that a sizable number of users will think that making those additions is well worth the cost and trouble. If you do add the scanner, the program, the memory and the Mac together, said artist Monroy, the result is that "you don't have to send out your photos anymore."

Or, as Microtek spokesman Bob Hsieh said, in publishing quality what is feasible quickly becomes what is expected. "People were accustomed to dot-matrix printers until they saw LaserWriter fonts. It redefined the standard overnight for what kind of quality they wanted in their publications. When people start using continuous-tone images, they'll rapidly become accustomed to the higher quality than they can get with simple line art." ■

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Beefing up the Macintosh SE

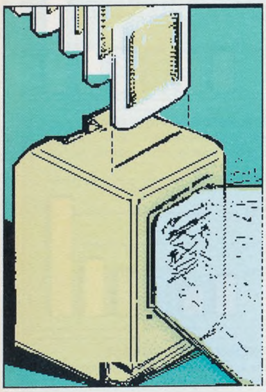
New 68020 accelerator cards add muscle and memory to bring the SE's performance to Mac II levels. Levco, General Computer and Radius use different techniques, but the cards from all three make the SE a far more responsive machine while preserving the small footprint and convenience of the traditional Mac design.

BY RIC FORD
MacWEEK Staff

The Macintosh SE feels beefy enough when you have to carry it, but it lacks the muscle of the Mac II when it's time to manhandle data.

Now accelerator boards from Radius Inc., General Computer Corp. and Levco Inc. inject a shot of steroids into the Mac SE's expansion slot, giving it just as much power as its big brother but in a compact package.

Levco's Prodigy SE, General Computer's HyperCharger 020, and Radius' Accelerator are all built around a 68020 processor, running at approximately 16 MHz — the same configuration the Macintosh II uses. The overall speed of each is comparable to the speed of a Macintosh II, but the results are achieved with markedly different approaches. These design choices mean each accelerator performs certain tasks better than others, but performance differences between the products may not be as important as other features when choosing among them.



Coprocessors

All accelerators tested came with optional 68881 coprocessors installed. The 68881 can take over "floating-point" numerical operations from the main processor and execute them much faster. Trigonometric functions like sine and cosine get a big boost in speed.

A few programs, such as Microsoft Excel 1.04 and D^2 Software's MacSpin, are designed to recognize and make use of a 68881 directly. Many other programs use Apple's SANE (Standard Apple Numeric Environment) software package and benefit from the 68881 only if SANE calls are somehow redirected to the special hardware.

Radius automatically redirects SANE calls to the 68881. Levco gives you the option to redirect or not redirect with a button in the Control Panel. General Computer offers Control Panel buttons to choose whether or not to redirect everything possible for maximum speed (like Levco), or redirect some calls and do others in software for maximum precision and compatibility (like Radius).

General Computer's HyperCharger 020 is outfitted with a 68881 running at 12.5 MHz. This is slower than the 16-MHz models used in the other two accelerators, but it is due to be replaced by the faster version in the next production run.

Performance

Accelerators compete on the basis of their ability to improve performance, but rating performance is a tricky business.

Disk performance of all three accelerators proved to be identical. There was no noticeable change in speed from a standard Macintosh SE in tests that duplicated files on floppy disks and on a hard disk, or with Steve Brecher's DiskTimer II disk-test program.

A number of special test programs supplied by Radius and MacMemory gave different results for different accelerator configurations, helping to show how various components affect performance. The results, however, were not very consistent from run to run. The set of "real-world" tests shown in the accompanying charts on Page 24 proved more consistent while still demonstrating perceptible differences among the products.

The accelerators were configured as equally as possible for the tests, and the same Apple Internal 20SC hard disk was used. The Control Panel cache was shut off and the 68020 instruction cache was turned on. All 68881 coprocessors were active. GCC SANE was used for the HyperCharger 020 and SANE rerouting also was chosen for the Levco board.

The performance boost obtained by each of the accelerators over the standard Macintosh dwarfs the differences among them, but the Prodigy SE was the best performer in the tests.

HyperCharger 020 appears to suffer from the slower clock rate of its 68881 coprocessor.

The Radius Accelerator demonstrated slowdowns in floating point benchmark tests, apparently because of the choice of a strict, highest-precision SANE emulation like HyperCharger's Apple SANE option. (HyperCharger floating point benchmarks were much slower when it was switched from GCC SANE to Apple SANE.)

Configurations

Memory configurations in the accelerators present a confusing variety of designs.

A unique feature of the Radius approach is its 32 Kbyte, write-through static RAM (SRAM). This small, fast memory is used as a cache to store recently used information for instant access by the 68020 processor. It provides a big speed boost for many operations, especially graphics, and its effectiveness was demonstrated in the scrolling and PackIt tests.

Additional RAM for a Radius-equipped Macintosh can be installed on the Macintosh logic board in the standard way, by swapping 256-Kbyte SIMMs (single in-line memory modules) for 1-Mbyte modules.

Levco and General Computer provide for optional dedicated RAM on their own boards. This RAM is accessed directly by the 68020 processor at twice the rate of normal Macintosh RAM (using a 32-bit bus).

The General Computer HyperCharger board makes use of the same SIMMs used in the Macintosh II and provides access to both the native Macintosh RAM and this faster, dedicated RAM.

Levco uses a special custom RAM module. Normal Macintosh RAM is unavailable except when the system is being used in full-compatibility mode. (In that configuration, the Levco dedicated RAM is unused.)

Levco recommends using spare RAM on the Prodigy for a RAM disk and not for a Control Panel cache. Included with the Prodigy SE is a special RAM disk in beta test form that retains its contents when the system is restarted. It loses data only if power is turned off. RAM disks, however, are generally more trouble to set up and use than caches.

Benchmarks showed performance dropped when the HyperCharger wasn't forced into using its dedicated memory by allocating slower Mac RAM to a cache or RAM disk. (A 1-Mbyte RAM disk was used during the tests.) This apparently is why Levco ignores the

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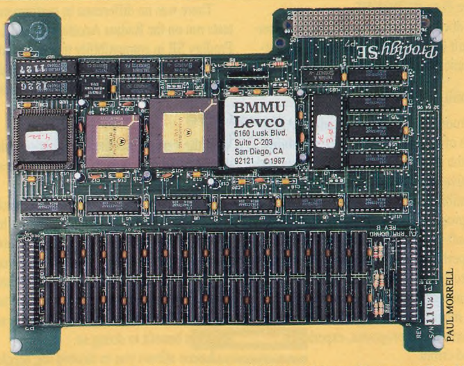


The Prodigy is the only accelerator tested with a socket for a 68851 Paged Memory Management Unit chip.

Prodigy SE

Levco Inc.
6160 Lusk Blvd., Suite C-203
San Diego, Calif. 92121
(619) 457-2011

Base price: **$999** (includes 1 Mbyte of additional RAM, no 68881). Expanded configuration: See chart on Page 24.

Strengths: fastest; full-compatibility mode; SANE option; excellent manuals.

Weaknesses: higher price; cumbersome board design; ignores the Mac's native RAM; Control Panel cache not recommended; uses non-standard memory modules.

HyperCharger 020

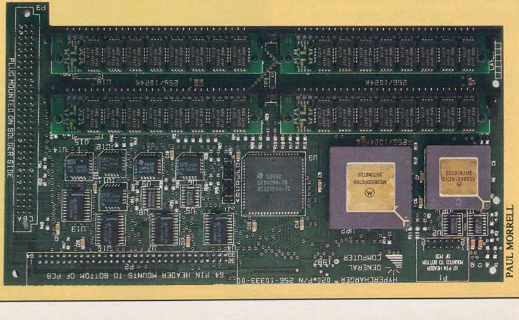
General Computer Co.
215 First St.
Cambridge, Mass. 02142
(617) 492-5500

Base price: **$999** (with no additional RAM; no 68881). Expanded configuration: See chart on Page 24

Strengths: clean hardware design; uses the Mac's native RAM; three SANE options.

Weaknesses: lacks full-compatibility option; currently uses slower 68881 chip; AppleTalk doesn't work with 68020 cache turned off; no telephone support.

HyperCharger is unique in being unable to run AppleTalk correctly if the 68020 instruction cache is disabled.



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logic-board RAM except in compatibility mode.

ROM performance

We tested a special HyperCharger utility due to be released in August. HyperROM INIT is a file that works at startup time if it is placed in the System folder. If it is moved out of the folder, it has no effect. HyperROM INIT copies about 90 Kbytes of Apple's ROM routines into fast, dedicated RAM on the General Computer board, remapping ROM calls to this area. Because this RAM can be accessed twice as fast as ROM (32 bits at a time rather than 16), it boosts performance of virtually all applications, and it is especially noticeable with graphics.

The effectiveness of this ROM-copying technique is shown by the differences in the results of the HyperCharger tests with and without the HyperROM INIT.

Levco does something similar, but the operation is built into the accelerator itself, operating automatically at startup time.

Compatibility

Levco's Prodigy Prime SE and Radius' Accelerator both offer a crucial function: the ability to bypass the accelerator board completely and use the native Mac 68000 in normal mode for full compatibility with existing programs.

Many programs, such as Aldus' PageMaker, Microsoft Word 3, Silicon Beach Software's SuperPaint and Symmetry's Acta, will work correctly on an accelerated Macintosh, taking advantage of the extra speed. Others, especially music programs, games and telecommunications programs, experience crashes and errors.

One such program is FreeTerm 1.8, which writes random "garbage" characters to the screen when run on a 68020. FreeTerm did work correctly with either the Prodigy or the Accelerator installed in the Macintosh as long as they were set to full-compatibility mode at startup time. Other problematic programs, such as Deluxe Music Construction Set from Electronic Arts, also worked in this manner.

General Computer's HyperCharger 020 lacks a full-compatibility mode. It provides the option of turning off the 68020 instruction cache, which enables some programs to run correctly, but FreeTerm, Deluxe Music Construction Set and similar programs cannot be used until the HyperCharger is removed from the Macintosh or the vendors upgrade the software. The HyperCharger also is unique in being unable to run AppleTalk correctly if the 68020 instruction cache is disabled.

All three products come with special patches to enable MacWrite 4.5 to run with the 68020. Radius' patch is automatic. Levco and General Computer offer the option of turning off the patch if you are not going to use MacWrite 4.5. In any case, this point should become moot with Apple's release of MacWrite 4.6.

There was no difference in performance tests run on the Radius Accelerator and Levco Prodigy SE in compatibility mode, an indication that the accelerators are truly being disabled and that there is no "overhead" incurred.

Control

With the various compatibility options, there should be an easy way to control accelerator configurations.

Radius provides its own Control Panel that is accessed by holding down the mouse button at startup time, giving the option of disabling the accelerator entirely. The 68020 instruction cache can be turned off and on only by using this panel at startup time. You also also turn off Radius' SRAM cache, although there is no apparent benefit to doing so.

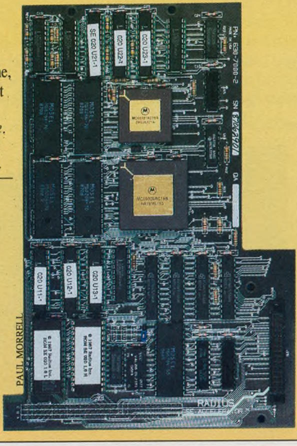
Levco allows you to disable the accelerator at startup time by using tricky combinations of the power switch, reset switch and interrupt switch. Friendlier buttons in Apple's Control Panel give control over the 68020 instruction cache, the MacWrite 4.5-compatibility option and whether you want to have SANE calls redirected to the 68881.

Accelerator

Radius Inc.
404 East Plumeria Drive
San Jose, Calif. 95134
(408) 434-1010

Base price: **$995** (with 32-Kbyte SRAM cache, no 68881). Expanded configuration: See chart on this page.

Strengths: low price; full-compatibility mode.
Weaknesses: no provision for additional fast RAM; no control over SANE; tricky to install.



PAUL MORRELL

Radius provides its own special control panel that is accessed by holding down the mouse button at startup time, giving the option of disabling the accelerator entirely.

ACCELERATOR BOARDS PRICE COMPARISON

Basic Price

	Finder RAM	Fast RAM	Price
Radius Accelerator	1 Mbyte	32 Kbyte	$995
HyperCharger 020	1 Mbyte	0	$1,499
Prodigy SE	1 Mbyte	1 Mbyte	$1,499

Expanded Configuration

	Finder RAM	Fast RAM	Math coprocessor	Price
Radius Accelerator	2.5 Mbyte	32 Kbyte	16 MHz 68881	$2,389*
HyperCharger 020	2 Mbyte	1 Mbyte	12/16 MHz 68881	$1,699**
Prodigy SE	2 Mbyte	2 Mbyte	16 MHz 68881	$2,298

*using 2-Mbyte memory expansion kit ($999 list)
**16 MHz 68881 will be used in the future
***Finder RAM is 1 Mbyte in compatibility mode

HyperCharger also adds buttons to the Apple Control Panel. It lets you choose SANE modes, turn off the 68020 instruction cache and control the MacWrite 4.5 patch.

Hardware and installation

These accelerators are among the first products to take advantage of the Macintosh SE's new expansion slot. The boards mount parallel to the Macintosh logic board, plugging into the expansion connector and resting on short posts attached by screws to the logic board.

General Computer's HyperCharger 020 is a model of clean design. It is compact, easy to install and doesn't interfere with anything. The manufacturer says it meets all Apple design specifications for expansion cards.

The Radius board is the most difficult to install, thanks to its own "MagicBus" expansion connector (for adding other enhancements), a socket that must be routed through a hole in the metal Mac chassis. Installation requires bending the Mac frame to "jump" the board in. This was more aggravating when the Radius ROMs had to be exchanged for a new set to fix some bugs, necessitating the removal and reinstallation of the board.

The Prodigy SE is the biggest board, completely covering Apple's RAM chips and raising some questions about cooling efficiency. It also fit poorly into the Apple expansion slot, being designed for only partial insertion at the one end. The Prodigy's own expansion connector is a low-profile design, making it easier to install, at least, than the Radius Accelerator.

Expansion connectors on all three units provide the ability to attach large-screen displays to the accelerated Mac. The Radius board supports the company's Full-Page Display. Levco supports MicroGraphic Images' and E-Machines' displays. General Computer supports E-Machines' screens.

Support

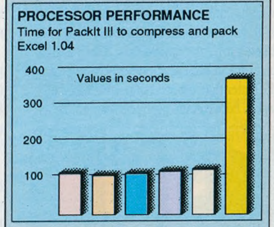
Levco sells the Prodigy SE to end users doing their own installations. The installation manual is excellent, but the Prodigy warranty covers labor as well as parts only if the unit is installed by an authorized Levco dealer.

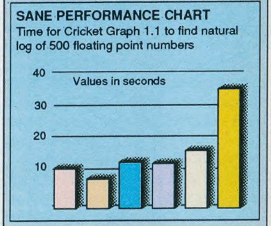
General Computer and Radius insist on having their accelerators installed by authorized dealers. Like Levco, their warranties are for 90 days. General Computer is the only one that does not supply end-user phone support.

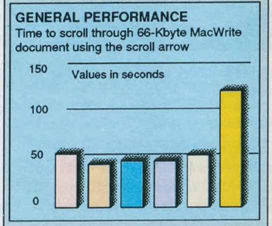
All the packages come with adequate user manuals. Levco's is outstanding, if a little too cute in sections. It covers many theoretical details and includes an appendix on program-

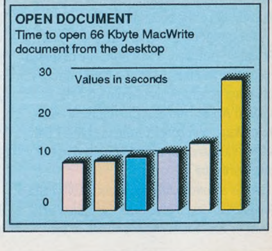
HOW THEY COMPARE

- Macintosh II
- Prodigy Prime SE
- Hypercharger 020/HyperROM INIT
- Radius Accelerator
- HyperCharger 020
- Normal Macintosh SE compatibility mode


PROCESSOR PERFORMANCE
Time for PackIt III to compress and pack Excel 1.04


SANE PERFORMANCE CHART
Time for Cricket Graph 1.1 to find natural log of 500 floating point numbers


GENERAL PERFORMANCE
Time to scroll through 66-Kbyte MacWrite document using the scroll arrow


OPEN DOCUMENT
Time to open 66 Kbyte MacWrite document from the desktop

ming the 68020 and 68881 processors.

Problems

The Radius Accelerator had two problems during the testing. A floppy-disk initialization problem was fixed with a new version of the Radius proprietary ROM chips (Version 1.7). Radius said the second problem, an incompatibility with General Computer's FX/40 hard disk, also has been fixed in an even newer ROM version, numbered 1.8.

Our sample Prodigy SE refused to work after installation three times in two Mac SEs. Minor adjustments to the board remedied the problem each time. There were no problems after it had once started successfully, even though the Mac was turned on and off repeatedly and moved. The fourth time we installed the board, it exhibited no problems at all, indicating the trouble was probably attributable to alignment or pin contacts.

General Computer's HyperDrive 020 board and the beta-test HyperROM INIT proved trouble-free.

Choosing

Eventually, multifunction boards with processors, modems, network interfaces and built-in large-screen adapters may become available for the Mac SE. But such boards are probably a long way off, and they will undoubtedly be expensive if they do come to market. High performance is available now, and if you need it, there is no reason to wait. Besides, the accelerators reviewed here provide extensions of the SE's expansion slot so that additional hardware can be added in later (although there's little room left inside the computer).

If your software environment consists only of Mac II-compatible, mainstream programs like Word 3, PageMaker, Forethought's FileMaker Plus, ACIUS' 4th Dimension and Microsoft Excel, the HyperCharger 020 will do fine. It offers clean design at a reasonable price and promises additional speed from a faster 68881 and the HyperROM INIT.

The big disadvantage of the HyperCharger is the lack of a full-compatibility mode. It cannot run many games and music programs. About half the current telecommunications programs have difficulty with the 68020 and so do most of the print spoolers.

If you need to run such programs frequently, it may not make sense to buy an accelerator now; there's no benefit from these cards when they're in compatibility mode. The majority of these problems will be fixed with new software versions before the end of the year, but compatibility is a consideration at the moment.

The Radius Accelerator, once it gets squeezed into place, provides an easy-to-use performance boost at the lowest price. The Control Panel gives easy access to a full-compatibility mode, and the unique SRAM cache achieves impressive performance gains overall.

Memory upgrades may be more expensive and slower with the Radius Accelerator because it uses only RAM on the Mac's logic board.

Another limitation with Accelerator is the lack of control over SANE routines. You get an automatic remapping of SANE calls to the 68881, but there is no equivalent to General Computer's high-speed GCC SANE option.

Levco's Prodigy SE almost always arrived at the finish line first, thanks to its use of fast, dedicated RAM for all operations, including access to routines normally stored in ROM.

Minor Prodigy disadvantages are extra cost and its oversized hardware layout.

Conclusions

It is surprising that Mac II-like performance, combined with traditional Mac portability is available before the Mac II is out in quantity. The full-compatibility mode provided by Radius and Levco is an important benefit, but all three of the accelerators reviewed make the Mac SE a far more responsive machine. ■

MacWEEK will review accelerator boards for the Mac Plus in a forthcoming issue.

CORRECTION

In our July 20 review of internal hard disks for the SE, parts of the Hardware Features chart on Page 16 were garbled. Below is a corrected chart showing SCSI addressing options for each of the six drives reviewed:

HARDWARE FEATURES

Product	SCSI addressing
CMS PRO40-SE/i	0-6 via jumpers
Peripheral Land PL40i	0, "fixed"
General Computer FI/40	0-6 via software
Mirror 450 SE	1-6 via pushbutton
Warp Nine P45i	1-6 via pushbutton
Rodime 450 RX	1-6 via jumpers
Apple Internal 20SC	0, "fixed"

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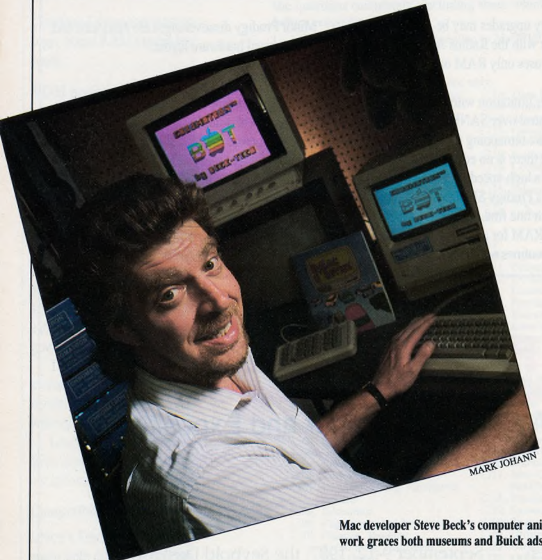


Mac developer Steve Beck's computer animation work graces both museums and Buick ads.

From Mac-made movies to talking dogs

BY MARY FRIEDLAND
Special to MacWEEK

BERKELEY, Calif. — In the basement of a Victorian hotel where Eleanor Roosevelt took her holidays, Macintosh developer Steve Beck is using a computer as a movie projector.

Beck slips a disk into a Macintosh drive, lights a cigarette and leans his large frame against the back of a chair. Four little icons flash on the "booth" as he exhales a stream of smoke, his long arms reaching for the keyboard and the mouse. He clicks on the movie projector icon, then triggers a queue of his favorite flicks.

"This is MacMOVIES," Beck's booming baritone proclaims, as a soccer ball leaps across the Mac's screen. Beck created the program that bounces and spins the ball in "30 frames per second, just like TV."

The ball gives way to a sultry Olivia Newton-John, swishing her hair and lip-syncing a silent song. She will soon sing out loud, Beck promises. He brakes her down to slow motion, then throttles her back to full speed. "People don't know what to call this medium," Beck says with obvious glee.

Beck, 38, is founder and president of Beck-Tech, an electronics, computer graphics and microcomputer research and development firm. With his wife, Katie — the company financial manager — and a couple of engineers, Beck invents computer products and applications.

Olivia is replaced by a pulsating human heart. The heart images were drawn in MacPaint; Olivia was digitally scanned through MacVision. The animation was created with MacMOVIES, Beck's picture processor that strings bit-mapped images into sequences, compresses the sequences for compact storage and runs them in rapid-fire video simulation.

The heart is beating simultaneously on the Mac screen and a big Apple monitor. "Chromatron makes the big picture," Beck says, indicating a small control box linking the Mac and the monitor. Chromatron is another Beck-Tech product, a video-scan converter that switches Macintosh signals into standard video signals that can be taped, projected or broadcast with regular TV equipment. Beck says, "If you want to show Mac images on a giant screen, you can either buy a $50,000 projector from Hughes or buy a $5,000 Sony and a Chromatron."

A dramatic pause follows as Beck freezes the pulsation of the heart. He flips the color switch on the Chromatron panel. Now the heart glows pink on a violet screen, and royal-blue blood surges through grass-green veins. No trick to it, Beck says: Simply assign colors to fill patterns in MacPaint. Chromatron interprets the colors in rich video hues.

Next in queue is a business graph Beck drew with Microsoft Excel. An ordinary graph, it seems at first frame: a growth line and a few clusters of vertical bars. Then Beck bangs a key and the bars shoot up. The arrow at the tip of the growth line blasts off like a rocket.

Is this a boardroom cartoon?

"Chromatron with MacMOVIES is the gateway for Macintosh visuals into corporations," Beck says. "Video is the new corporate medium for any communication, from a training session to an annual report. Let's face it: We are bombarded with information. You want your message to stand out from the crowd. The beauty of the Mac is all special effects are software-controlled. For example, an engineer can design building specs and with MacMOVIES make a 'walk through.' That's a cheap way to simulate a big, fancy production."

Now Beck extols the principle behind his demos: DTV. "Desktop video is going to be

See BECK, next page

Silicon cowboy of desktop publishing

Carl Haeberle's Mac Studio offers more than typesetting

BY CLIFF LEHMAN
MacWEEK Staff

SAN FRANCISCO — Carl Haeberle drives his machine hard, like a sports car on a twisting mountain road. Cigarette dangling from his lips. Rock 'n' roll on the radio. He's a silicon cowboy.

Haeberle is piloting Aldus' PageMaker 2.0 on a Mac Plus with a hard-disk drive. In his own words, "I can make it fly."

The front door is propped open, but the morning breeze fails to freshen the smoke-filled air of his high-tech, hole-in-the-wall shop: "The Mac Studio."

Part of the nationwide proliferation of shops and services made possible by the advent of document processors and laser printers, Haeberle hopped on the desktop-publishing bandwagon two years ago. He started out working part time out of his home, consulting, teaching and producing newsletters on his Mac.

With dreams of one day being his own boss, Haeberle opened his San Francisco shop more than a year ago. He still divides his long days between the shop and the local radio station where he is the news director.

Despite the constant hum of three Macs pushing out copy on a LaserWriter and a steady stream of customers and phone calls, the shop feels like it's Haeberle's living room. His work ranges from a newsletter for a software retailer to a local Irish newspaper.

A portly neighborhood lawyer steps in to mooch his morning cup of java and is greeted by Haeberle's rolling-thunder voice calling out, "And a cheery good morning to you."

The same hearty greeting awaits everyone who walks through the door of the Mac Studio.

"I open the shop at 9 a.m. and make sure it's up and running before dashing to the station for five hours," Haeberle says. He is back at the shop by 6:30 p.m. and stays until 9 p.m. or later five days a week. He also works weekends in the shop, "but only eight hours a day."

Although he is enamored of the Mac and enthusiastic about PageMaker, Haeberle is a realist about the potential of desktop publishing.

"The ads say, 'Now that you have this equipment, you can be a publisher.' That's like saying if you've got a scalpel, you can be a surgeon," he says.

Haeberle, 48, says he's been designing all his life, from college theater lighting and stage design to planning the facilities for two radio stations and a park.

"The only difference between this and what I've done before is that this is in two dimensions," he says.

A student in one of the Macintosh classes Haeberle runs in the back room wanders in to pay his fees. He stands, shy but curious, looking over Haeberle's shoulder.

"This is modern technology at work," Haeberle says jokingly. "I'm actually designing and setting a book right before your eyes."

Looking up, Haeberle eyes the student and says: "But like I always say, the waxer and light tables still come on before the computers. A lot of our work is still more practically done by traditional ways."

Haeberle's down-to-earth attitude is reflected in the style of training he offers.

"We don't even mention the word computer for the first two sessions. We keep it at the level of treating it like any other machine."

Classes are always full and have included groups from small businesses and corporations like Pacific Bell and the University of California at San Francisco.

A bearded man in casual business attire walks in. He blushes as Haeberle exclaims, "You chubby-cheeked fella. You could play Santa with those cheeks."

The guy smiles weakly but gets down to business. Apparently, he's not profiting from a newsletter he has been contracted to produce.

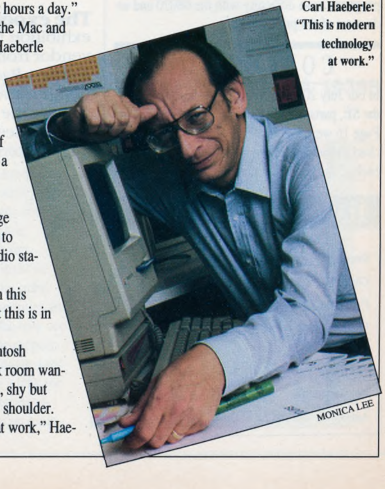
"The first month you lose money, the second month gets better, and by the third you start getting it down," Haeberle says matter of factly.

In all, Haeberle keeps 15 teachers, consultants, graphic artists, typesetters and paginators on tap for contract work. His aim is to provide whatever service may be needed to see a project to completion. "We're not just typesetters," he says. "If someone needs it, we do everything from copy editing to a full rewrite."

The client for a book Haeberle is working on walks in. The book is part of a three-book package that is Haeberle's first major contract.

Haeberle bubbles over, showing off the miniscule special symbols he has managed to draw "right in PageMaker." His customer is all smiles, too.

But what tickles Haeberle most is the irony that these books are technical manuals for a DOS-based machine. ■



Carl Haeberle: "This is modern technology at work."

BECK

Continued from previous page

bigger than desktop publishing," he says. "Video is a visual language, the universal language. You've got 30 images per second in video, each image worth 1,000 words. That's a lot of information!"

The mass market is less enthusiastic. DTV gets confused with MTV. "It's hard to talk about computer video because computer people don't understand video and vice versa," Beck says. "But talk about networks — TV is one HUGE one. A billion TVs worldwide!"

Beck has long tinkered in electronic moving images. In 1968, as an electrical engineering student at the University of Illinois, he invented a digital video synthesizer that gyrated colored patterns on a video screen to the accompaniment of Jimi Hendrix and The Who. Visiting Impressed PBS executives lured Beck to California to man a lab for new TV technologiesat San Francisco's PBS station, KQED, while completing his engineering studies at the University of California, Berkeley.

By 1976 Beck was designing computerized toys and arcade games. In 1978 he started designing on the Apple and opened the studio he now occupies in the Claremont Hotel in Berkeley, Calif.

Beck recalls an early project, an energy management system he designed for the Safeway grocery chain. "Safeway installed hundreds of Apples on the system, all over the world. If the temperature in an ice cream freezer somewhere got too high — Alarm, alarm!" Beck wails like a siren and stabs at the air.

During the early '80s, Beck's productions circled the globe. His "Electron Video Orchestra" performed in Europe and Japan. His avant-garde video, "Illuminated Music," was broadcast throughout Europe. It now resides at the Whitney Museum and Museum of Modern Art, both in New York, the Chicago Art Institute and San Francisco's Museum of Modern Art. Video effects by Beck graced Ken Russell's film, "Altered States," and the television program "In Search Of."

Beck sits in his office, surrounded by floor-to-ceiling reference books and mechanical contraptions resembling high-school science projects. He scoops up a baggy stuffed dog and tickles its protruding belly. A muffled voice inside the creature giggles and squeaks, "I want a hug." Beck nuzzles it obligingly.

That is Wrinkles, another of Beck-Tech's 85 products. The toy manufacturer Coleco commissioned Beck last year to teach its beloved mutt to talk. "I'd been working on a language engine for five years," Beck says, stuffing an electronic bone in the dog's mouth. Wrinkles slurps appreciatively. Hailed last Christmas by the New York Times as "the most technically sophisticated" of the season's electronic animals, Wrinkles barks, sings, speaks and snores. Five sensors hooked to its microprocessor, Beck says, endow Wrinkles with a primitive artificial intelligence. And his little microchip contains as much ROM as an Apple II.

We retreat to the studio, where Beck wants to demo "the Buick thing." Cables and wires dangle from the walls like vines in a jungle. Beck-Tech-created posters diagraming the innards of a Mac overlook jumbles of circuitry identified as "future Beck-Tech products."

Beck loads the program. On the color monitor, a Buick transforming into a hawk introduces the home marketing tool Beck developed for General Motors Corp.. "You can call 800-87BUICK and get this thing for free," he says. "Buick has already distributed 50,000 copies."

Like a kid in a video arcade, Beck drives the program through its paces. Click. An engine diagrammatically chugs, forcing chartreuse "power" to explode into bilious purple "exhaust." Click. A suspension test bounces the springs on the rear wheels of a sedan. Click. The "load the family into a Skylark" routine. "Put the dog in the driver's seat. Stick mom in the trunk. Fill the car with kids!" Beck narrates, dragging icons inside the car.

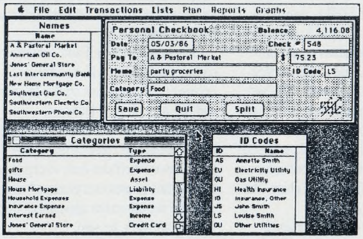
Beck would like to pack more animation into the Buick demo. He is enhancing MacMOVIES with macros and utilities and is developing new versions for the Mac II and SE. "We're looking toward the day when we'll have 10 to 20 megabytes of RAM," Beck says.

Beck showed his wares at the SIGGRAPH computer graphics show in Los Angeles in July, where he captured an award in 1985. At Mac Expo this month, he will host a computer-animation contest.

After a hard day at the office, Beck unwinds by gardening. He envisions his Macintosh running an 18-circuit sprinkling system in the vegetable patch behind his Berkeley home: "All I'd have to do is pick an icon, and a sprinkler would water the carrots.

"I may look into garden-management software next. You know, gardening is the No. 1 growth hobby in America right now." ■

MacMoney



Names

Name
A & Pastoral Market
American Oil Co.
Jones' General Store
Last Intercommunity Bank
New Home Mortgage Co.
Southwest Gas Co.
Southwestern Electric Co
Southwestern Phone Co

Personal Checkbook
Balance 4,116.08
Date: 05/03/86
Check # 548
Pay To A & Pastoral Market
$ 75.23
Memo party groceries
ID Code LS
Category Food

Categories

Category	Type
Food	Expense
gifts	Expense
House	Asset
House Mortgage	Liability
Household Expenses	Expense
Insurance Expense	Expense
Interest Earned	Income
Jones' General Store	Credit Card

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COMPONENTS

Continued from Page 1

"Apple's single-sourcing some stuff. I assume because they have to," said Michael Murphy, editor and publisher of the California Technology Stock Letter. Because of the cutting-edge technology used in the Mac II, second-sourcing may not have been possible, Murphy said. "Everyone knows single-sourcing causes problems, as once again in this case it has," he said.

Many Mac II enthusiasts have been waiting to get their hands on a complete system since Apple premiered the machine at Universal Studios in Hollywood on March 2. But the computer maker best known for its user-friendly machines has made it difficult for anyone but hackers to use the Mac II.

After receiving their Mac IIs minus color monitors and internal 40-Mbyte or 80-Mbyte drives, impatient Mac II buyers have gone to great lengths to compensate. Some tinkerers have even retrofitted the 80-Mbyte disk drive made by Jasmine Computer Systems of San Francisco into the Mac II. "Yes, they're actually doing that," said Dennis Chang, president of Jasmine. Chang said Jasmine will introduce its own internal disk drive for the Mac II at the Mac Expo in Boston Aug. 11-13.

The OEM manufacturer of the Mac II drives is Quantum Corp. of Milpitas, Calif. "We're shipping to Apple in large quantities, but we're not satisfying their demand," said a top Quantum official who declined to be named. He said that Quantum and Apple had a brief misunderstanding concerning the drive's allowable noise level. Apple reportedly demanded the drives be muffled beyond the initial specifications. The lower noise level is necessary to meet tough new requirements in the European market, the Quantum source said.

Some analysts remain skeptical, however. Bruce Lupatkin, an analyst with Hambrecht & Quist Inc. in San Francisco, said he believes the issue was quality control: too many head crashes. "There was a higher percentage of contamination than they would have liked."

The absence of Apple's color monitors has resulted in similar scrambling. Resourceful users have rejected the idea of purchasing a costly monochrome monitor for interim use. Likewise, most are hesitant to purchase an even more expensive 19-inch color monitor from third-party vendors such as SuperMac Technology of Mountain View, Calif. Instead, they are opting for a Sony Multiscan monitor, even though a compatible monitor cable was unavailable until recently.

The reason for shortages of storage devices, the third missing link in the Mac II riddle, is perhaps the most baffling. At the end of July, Apple told dealers to expect an eight-week delay in receiving 1-Mbyte single in-line memory modules (SIMMs) for the Mac SE and II.

Immediate memory upgrades are considered essential by most Mac II users, said Mark Wozniak, owner of the Computer Plus stores in San Jose and Sunnyvale. "They need a minimum of 2 Mbytes and with a large-screen color monitor they need 4 Mbytes," he said. But "memory has been very hard to get," he said.

Some people speculate Apple has not been able to lay its hands on the 256-Kbyte chips necessary for building the SIMMs. Japan has responded to pressure from the U.S. government by setting unofficial quotas on the production of D-RAM chips, said a Semiconductor Industry Association spokesman. SIA has denounced the action, warning that it could create an artificial shortage of chips.

But Murphy said he doubts Apple is experiencing any problems buying semiconductors. "There is no shortage of 256-Kbyte chips," he said.

The argument against a chip shortage is bolstered by the fact that companies such as Dove Computer Corp. in Wilmington, N.C., and Open Mac Enterprises in Concord, Calif., are selling SIMMs like hotcakes.

Adam Lazare, executive vice president of Open Mac, said he attributes Apple's inability to supply SIMMs to corporate bureaucracy and disorganization.

Despite the delays, most analysts defend Apple's performance, pointing out that glitches are normal when introducing a new product.

During a recent stock analysts meeting, Apple said it has been hurt by shortages of storage devices and color monitors but predicted the shortages would end by September. ■

SUPERMAC

Continued from Page 1

of color paint software by marketing PixelPaint," said Chris Yalonis, chairman of Jupiter Inc., a management consulting firm in Sausalito, Calif.

One use of PixelPaint will be to generate color transparencies for business presentations on devices such as Dunn Instruments' film recorder, Duhring said.

"I see [PixelPaint] first used as a tool for presentations for corporate clients," said Ron Romero, design consultant with Carbone Smolan Associates in New York, "but it's a question of what output devices are available as to how useful it will really be."

PixelPaint allows users to import artwork to be "colorized," Duhring said.

The initial release of PixelPaint will import Paint, PICT I and II and Encapsulated PostScript files. The program converts imported PICT files to bit maps and accepts only the bit-mapped portion of EPS files. PixelPaint's initial release will not import TIFF images, Duhring said.

The basics of PixelPaint's interface and editing capabilities will be familiar to users of existing paint programs on the Macintosh Plus and SE, according to Duhring.

However, the Macintosh II's ability to display eight bits of color or gray-scale information allows PixelPaint both to expand on the capabilities of previous paint software and to enhance the on-screen appearance of bit-mapped artwork, he said.

The program's normal drawing mode features a palette of up to 256 user-selectable colors.

The user can draw lines and hollow or filled shapes in solid or patterned colors.

In addition, PixelPaint offers a Special Effects mode, which allows the user to customize the drawing tools, Duhring said.

In the Special Effects mode, PixelPaint users can select primary, secondary and background colors and are given access to an effects Dialog Box that allows the drawing tools to be customized.

Duhring declined to comment on whether his company is developing a 24-bit video interface or on whether PixelPaint would eventually support a palette of 16 million colors.

COURTESY SUPERMAC TECHNOLOGY

SuperMac's 19-inch Grey-Scale Monochrome Monitor shows Letraset's new program, Image Studio.

SuperMac also is planning a flurry of new product introductions at Mac Expo, according to Tom Rielly, SuperMac marketing manager. The company will show off two new color monitors, a monochrome gray-scale monitor for the Mac II and two new storage devices, according to Rielly.

The additions to SuperMac's line of monitors and graphics boards for the Mac II and SE are the 16- and 19-inch SuperMac Color Trinitron Monitors, made by Sony, and the 19-inch Grey-Scale Monochrome Monitor, made by Ikegami. All three monitors are driven by SuperMac's Spectrum color graphics board on the Mac II and provide 1,024-by-768-pixel resolution.

The two additions to SuperMac's line of storage devices are the DataFrame XP 150 and the DataFrame XP 60+B. The XP 150 is a 150-Mbyte hard-disk drive that has an 18-millisecond average access time.

The XP 60+B is a removable hard-disk system with Bernoulli technology licensed by Iomega. The system uses 5.25-inch, 20-Mbyte disks with an average access time of 65 milliseconds, Rielly said.

The 60-Mbyte internal hard disk has an average access time of 28 milliseconds, according to Rielly. ■

SIGGRAPH

Continued from Page 1

not yet arrived for the Mac is that Apple's built-in QuickDraw graphics routines get in the way, according to Steven Beck, president of Beck-Tech of Berkeley, Calif. "QuickDraw in the Mac II is not directly set up to deal with TV graphics," he said. "You have to bypass QuickDraw in order to work within the limits of NTSC bandwidth."

Nevertheless, Genlock boards have been developed by companies such as Computer Friends of Beaverton, Ore., and Micro Systems Consultants of Van Nuys, Calif. Computer Friends said it hopes to ship its card this fall.

Other SIGGRAPH exhibitors who plan to develop Genlock or other video boards for the Mac II include Beck-Tech, Metheus of Hillsboro, Ore., RasterOps of Cupertino, Calif., and Matrox Electronic Systems of Quebec, Canada. In addition, companies like AT&T that have developed cards for the IBM PC have attended recent Apple developer forums, signaling their interest in developing video hardware for the Macintosh.

Companies also are developing frame-buffer and color-video display boards. For example, Matrox said it will offer a Mac II version of its Imaging Board (now available for PCs) that will allow users to grab images and manipulate them in real time for applications such as medical imaging, X-ray analysis and machine vision.

However, such performance does not come cheaply. These cards will cost approximately $5,000, about the same as the Mac II itself.

Video companies developing for the Mac were well-represented across the show floor, but Apple hosted several among the more than 20 third-party developers in its own booth.

Thomas P. Rielly, marketing manager of SuperMac Technology of Mountain View, Calif., said: "We're excited about high-end graphics on the Mac II and bringing the high-quality images achieved on the Silicon Graphics worktstation with Alias and Wavefront software. We're pleased to be represented in Apple's booth at SIGGRAPH."

Rielly said SuperMac is developing NTSC and Genlock capability for its Spectrum high-resolution graphics board. "Large color screens legitimize the Mac in the high-end graphic arts applications. We see tremendous potential for the Mac II in desktop presentation and video-graphics."

To demonstrate that potential, a VideoWorks II animation-software demonstration ran throughout the show on a Mitsubishi 37-inch color monitor and attracted large crowds. VideoWorks II from MacroMind Inc. of Chicago, Ill., is a real-time color animation program that allows users to create and edit animation sequences with artwork imported from programs like MacPaint and MacDraw.

Other vendors in Apple's booth included publishers of CAD, desktop-publishing and productivity software, reflecting Apple's strategy of penetrating the graphics market through its strengths in desktop applications.

"You need both productivity and scientific/technical tools. That's a part of our strategy," said Dave Kulbarsh, Apple's manager of engineering marketing. "We are happy to coexist with workstations in technical markets where Mac Pluses and SEs are used for applications like word processing, project management, spreadsheets and desktop publishing." ■

6 Color Solutions

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MAC THE KNIFE

Yes, Emily, it does sound more like the plot outline of a new Lorimar prime-time soap than the maneuverings of a mature industry, but people are whispering in the Knife's ear, even as we speak.

Marriage, divorce, leaving home, it's all so time consuming that it seems there's little thought given to maintaining reputations. The Knife isn't the only sharp character hearing complaints about the lack of service and tech support available from a newly acquired outfit with previously well-respected products. It's sad to watch a good reputation go down the drain. ...

A rose is a rose department: Is that hot, new QuickDraw laser printer from General Computer and Apple's Solo printer one and the same? As the story goes, there was such a ruckus at Apple about diluting the standard set by the PostScript LaserWriter that the company has decided not to market it after all but instead license the technology to General Computer to recover development costs.

If so, maybe Apple has done the same thing with color monitors for the Mac II. In this scenario, Apple originally contracted with Sony for both 13- and 19-inch monitors, but when problems appeared in the prototypes, Apple decided its image would take a beating if it brought two buggy products to market at the same time. So, in view of the uncertainty of demand for large monitors and the likelihood of problems, Apple decided to market the 13-inch model only.

No 19-inch monitor from Apple. No problem. Unless you happen to be Sony. Not wishing to offend an important third-party supplier, Apple cajoled others to pick up the 19 inchers. Interesting. At least it explains why SuperMac has two essentially identical 19-inch color monitors on the market at the same time. ...

Fear and loathing

Speaking of monitors, you'll see more different companies hawking Mac monitors at Boston than you would think prudent. No wonder Apple stock is soaring higher than Hunter Thompson on assignment. The market seems to see an endless summer of Mac sales to the MBA set. ...

Extended keyboards. Don't hear much of them (no documentation doesn't really count). They cost a lot and don't do much but cover desktop real estate (or maybe it's a scheme to extend the desktop metaphor?). But they do have those lovely, but useless, function keys. Hmm. Sure would be nice to be able to assign Desk Accessories to them. ...

Claris update: What else are they up to? Sniffing around to buy everything in sight, and we're not just talking Mac software here. They've been seen about town casting lustful glances at (gasp!) DOS-based software companies. And just when the Knife was thinking Ms. DOS a bit long in the tooth. ...

The folks over at Adobe must be getting a bit paranoid since everyone in town is talking about their first love flirting with other ways to describe a page of text. This week the Knife hears chirpings out of Philadelphia of another way to illustrate an idea graphically. Also rumors persist that a silent company in Seattle and a homeless company in Cupertino are waiting for ink to dry on their own Illustrator competitors. ...

Waiting for Godiva

Is the Knife the only one to see the July 15 beta version of MacDraw Plus? This has to be the longest beta test period of any product since HabaWord, yet there's no sign of a release date. With the official Apple Mac library updates just out, it looks like Apple's holding out the really good stuff for Claris. That explains those dark, sweet whispers of word-processing fulfillment.

Users complain to the Knife all the time about products. This week's gripe is SCSI drives that are shipped with drivers that won't work on the II. The drivers are on the way, but in the meantime, ever try using a II with just a floppy drive?

On the bottom of this week's stack of rumor mail is an anonymous missive with a Florida postmark. In typical capitalist tradition, this letter claims one hard-disk company has decided to do what Apple can't or won't — take those thousands of original HD20s that plug into the external floppy-disk port and turn them into SCSI HD20s. 'Bout time. See a need, fill it. Guess if you're really big, you just can't see smaller needs (or hear louder fans, huh Emily?).

***

Is there Knife after Boston? You bet. Contact the Knife at (415) 882-7370 or MCI (MactheKnife). Trade an industry insight for the only independent Mac newsweekly mug you can get. ■

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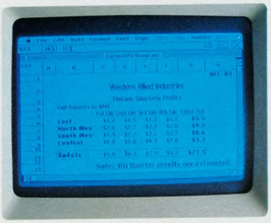

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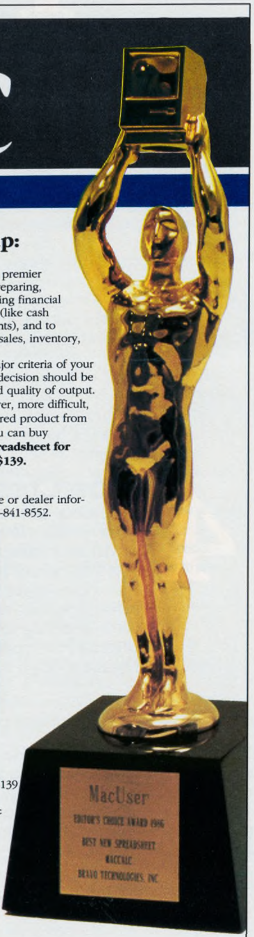

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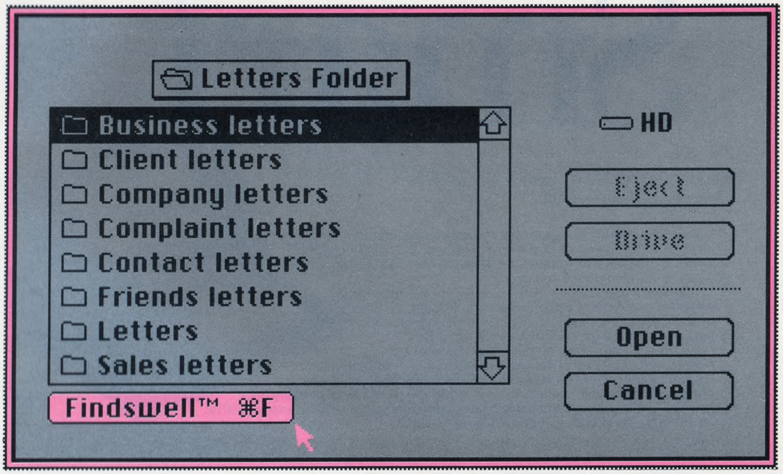

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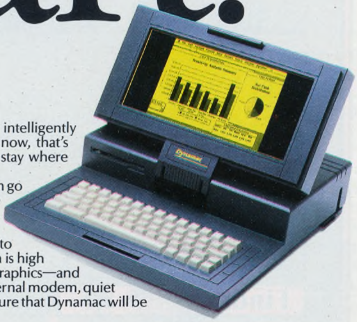

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